THE 69th ANNUAL ZOLA COOPER LEE T. NESBITT SEMINAR

A Clinical and Dermatopathologic Seminar

PRESENTED IN MEMORY OF ITS FOUNDER
James W. Burks, III, M.D.

Also Honoring Long-time Contributors:

Marvin E. Chernosky, M.D.
Herbert B. Christianson, M.D.
Wallace H. Clark, M.D.
Robert M. Fine, M.D.
Robert G. Freeman, M.D.
Lee T. Nesbitt, Jr. M.D.
Charles Perniciaro, M.D.
Richard J. Reed, M.D.
Morris Waisman, M.D.

2022 Guest Dermatopathologist

Anthony Fernandez, MD, PhD
W.D Steck Chair of Clinical Dermatology
Director of Medical Dermatology
Cleveland Clinic, Lerner College of Medicine
Cleveland, Ohio

Saturday, November 5, 2022

THE 69th ANNUAL ZOLA COOPER LEE T. NESBITT SEMINAR

Saturday, November 5, 2022

PROGRAM

Panelists:	Travis Vandergriff, M.D. Dipti Anand, M.D. Clay J. Cockerell, M.D. Carlos Ricotti, M.D. Anthony Fernandez, MD, PhD

Agenda:

8:00– 9:30 a.m.	Case presentations
9:30 – 9:45 a.m.	Break
9:45 – 11:55 a.m.	Case presentations
11:55—12:00 p.m.	Award presentations and announcements
12:00 p.m.	Adjourn

THE 69th ANNUAL ZOLA COOPER
LEE T. NESBITT SEMINAR

2022

OFFICERS AND FACULTY

President:	Pamela Martin, M.D.
Director:	Clay J. Cockerell, M.D.
Secretary/Treasurer:	Travis Vandergriff, M.D.
Webmaster:	Annie Morrison, M.D.
Panelists:	Dipti Anand, M.D. Clay J. Cockerell, M.D. Anthony Fernandez, MD, PhD
Moderators:	Travis Vandergriff, M.D. Carlos Ricotti, M.D.

Board of Directors:
Clay J. Cockerell M.D., Dallas, TX
Mark Cappel M.D., Tampa, FL
Carlos Ricotti M.D., Miami, FL
Scott Dalton D.O., San Antonio, TX
Thomas Nicotri M.D., New Orleans, LA
Travis Vandergriff M.D., Dallas, TX
Erin Boh M.D., New Orleans, LA
Tom Davis M.D., San Antonio, TX
Sandra Osswald M.D., San Antonio, TX
John Millns M.D., Tampa, FL
Pamela Martin M.D., New Orleans, LA
Dipti Anand M.D., Atlanta, GA
Jason Smith, M.D., Rome, GA

Emeritus Members:
Marvin E. Chernosky M.D., Houston, TX
Robert M. Fine M.D., Atlanta, GA
Robert G. Freeman M.D., Dallas, TX
Steven J. Hodge M.D., Louisville, KY
Jack Lesher M.D., Augusta, GA
Emily Omura M.D., Birmingham, AL
Charles V. Perniciaro M.D., Jacksonville, FL
Ron Rapini M.D., Houston, TX
Marilyn Ray M.D., New Orleans, LA
Richard Reed M.D., New Orleans, LA
Omar Sangueza M.D., Winston-Salem, NC
Leonard Gately M.D., Metairie, LA
Ted Rosen M.D., Houston, TX
Kenneth Greer M.D., Houston, TX
Thomas R. Wade M.D., Atlanta, GA
Dirk Elston M.D., Charleston, SC
L. Frank Glass M.D., Tampa, FL
Jacqueline Sasaski M.D., Gulfport, MS

Visit our website at: www.zolacooper.org

HISTORICAL BACKGROUND

As Dr. Jim Burks relates in the 1956 program, it was suggested at the 1953 meeting of the American Academy of Dermatology that a group of Southern dermatologists consider organizing a dermatopathologic seminar with the Southern Medical Association, similar to the seminar held with the meeting of the Pacific Dermatologic Association. Dr. Burks became the leader of this effort to organize such a seminar, one of the first ever established in this specialty as a continuing education program, but he credited Dr. Walter Nickel as an inspiration. In introducing Dr. Nickel as the guest dermatopathologist in 1958, Dr. Burks stated of Dr. Nickel "the creator and director of the CPC of the PDA for 10 years is largely responsible for the creation of this, the Zola Cooper Seminar."

The 1954 meeting of the Southern Medical Association was scheduled in St. Louis. Dr. Burks sought the help of Zola K. Cooper, Ph.D., Assistant Professor of Pathology and Assistant Professor of Medicine (Dermatology) at Washington University School of Medicine in St. Louis, and Consultant Pathologist to the Barnard Free Skin and Cancer Hospital. Dr. Cooper had also served on the faculty of the University of Oklahoma School of Medicine from 1946 - 1949. Though she was not a physician, Dr. Cooper had become an expert in the knowledge and diagnosis of skin diseases. She was one of the foremost authorities in dermatopathology. She devoted much of her time in 1953 and 1954 to the planned Seminar, and was to have served as the first guest moderator. She was found dead in her room on October 23, 1954. The Seminar was subsequently named the Zola Cooper Seminar in her honor. With Dr. Cooper's unexpected death, Dr. Hamilton Montgomery was selected as the guest dermatopathologist for the initial meeting in 1954. Others panelists participating in that 1954 meeting included Dr. Francis Lynch, the guest dermatologist of the Southern Medical Association's Section on Dermatology; Dr. John H. Lamb of Oklahoma City, Oklahoma; Dr. Francis A. Ellis of Baltimore, Maryland; Dr. Morris Waisman of Tampa, Florida; Dr. Joseph M. Hitch of Raleigh, North Carolina; and Dr. Ed Cawley of Charlottesville, Virginia.

Dr. James W. Burks, III, eminent dermatologist, pioneer dermatologic surgeon, member of the faculty of Tulane University School of Medicine, teacher, friend of many, and devoted deep-sea fisherman, was the founder, and then the Director and Moderator of the Zola Cooper Seminar for the remainder of his life. He died after fighting a blue marlin on a deep-sea expedition on July 27, 1978. Jim had many interests, but he remained dedicated to the Zola Cooper Seminar. He co-moderated every meeting, remained firmly but gently in control as moderator, and always finished the discussion of cases on time. He was generous in giving credit to others, careful to enroll the aid of worthy contributors, and dedicated to maintaining the goal of the Seminar as a practical continuing educational exercise for the practicing physician. His associates, Dr. John Yarborough, Dr. Gary Brown, and Dr. George A. Farber contributed significantly as well. Since its inception, virtually every prominent name in American dermatopathology has participated at least once in this Seminar. After Dr. Burks' death, the name of the Seminar was revised to the "James W. Burks-Zola Cooper Memorial Clinicopathologic Seminar" under the direction of George A. Farber, M.D.
In 1984, the Seminar was reorganized, continuing the affiliation with the Southern Medical Association, and was presented for ten years as the "Clinical and Dermatopathologic Seminar." In 1994, by general agreement, the memory and pioneering work of Dr. Zola Cooper were again recognized by renaming the Seminar as the "Zola Cooper Seminar

presented in memory of its founder, James W. Burks, III, M.D." Also honored are several other long-time contributors to the Seminar who have each served significantly in continuing the Burks tradition, many of whom participated for 35 or more years. Dr. Herbert Christianson was a Co-Director and Moderator from 1962 until his death; Dr. Wallace Clark contributed as a key dermatopathology panel member and "Faculty Moderator" at a critical time in the development of the Seminar from 1958 - 1973; Dr. Robert G. Freeman began participating in the Seminar in 1959, and he was the President and Director from 1984 - 1994; Dr. Richard J. Reed was been panel member, host, moderator, and significant contributor beginning in 1963; Dr. Morris Waisman was a panelist and Director of the Seminar from its inception in 1954, and was involved until his death; Dr. Marvin E. Chernosky was a long-time contributor, Director, Secretary-Treasurer and moderator from 1984 - 1995; Dr. Robert Fine was a generous contributor of cases and knowledge for many years; Dr. Lee T. Nesbitt, Chairman of the Dermatology at L.S.U. School of Medicine in New Orleans, was added as a recognized contributor in 2010. Dr. Nesbitt was an outstanding clinical dermatologist, and moderated and contributed cases to the Zola Cooper Seminar for over four decades, before his sudden and untimely death in 2014. The Zola Cooper Seminar Board of Directors voted in 2014 to rename the Seminar the "Zola Cooper-Lee T. Nesbitt Seminar," as a tribute to Dr. Nesbitt's lifelong support of the Seminar.

The 48th Zola Cooper Seminar was re-presented in Maui, Hawaii, and the 49th, 50th, and 51st Annual Seminars were presented in conjunction with the Fall meeting of the Louisiana Dermatological Society in New Orleans, Louisiana. The 52nd, 53rd, and 54th seminars were again held in conjunction with the Southern Medical Association in San Antonio, Texas, Charlotte, North Carolina, and New Orleans, Louisiana, respectively. The 55th was held in New Orleans with the combined meeting of Louisiana and Texas Dermatological Societies. The 56th Zola Seminar was held in association with the Texas Dermatology Society (Albuquerque, NM). In 2010, largely through the efforts of Dr. Nesbitt, the 57th Zola Cooper Seminar began a more permanent affiliation with the Louisiana Dermatological Society's Fall meeting. In 2018, the Seminar was held independently in New Orleans.

Purpose:

The Zola Cooper-Lee T. Nesbitt Clinical and Dermatopathologic Seminar is an educational organization designed to promote continuous excellence in the field of clinical dermatology and dermatopathology.

Contributions:

Tax exempt contributions are welcome. Contributions can be made payable to:

Zola Cooper Seminar
c/o Travis Vandergriff, M.D., Secretary-Treasurer
5730 Kenwood Ave
Dallas, Texas 75206

The Seminar's Federal Tax Identification Number is 30-0232262.

PAST CHAIRMEN, OFFICERS, MODERATORS AND PANELISTS

Chairmen:

James W. Burks, III, M.D., Founder and Chairman,	1953 - 1978
Herb Christianson, M.D., Co-Director,	1962 - 1983
George A. Farber, Sr., M.D., Co-Director,	1974-1983
Gary R. Brown, M.D., Co-Director,	1974
Robert G. Freeman, M.D., President and Director,	1984 - 1994
Thomas R. Wade, M.D., Director,	1994 - 1997
Clay J. Cockerell, M.D., Director,	1998 - present

Secretary-Treasurers:

James W. Burks, III, M.D.,	1953 - 1966
John Yarborough, M.D.,	1966 - 1969
George A. Farber, Sr., M.D.,	1970 - 1983
Marvin E. Chernosky, M.D.,	1984 - 1994
Lee T. Nesbitt, Jr., M.D.,	1995 - 1997
Charles V. Perniciaro, M.D.,	1998 – 2003
Marilyn Ray, M.D.,	2003 – 2008
Tom Davis, M.D.,	2009 – 2015
Travis Vandergriff,	2015 - present

Moderators:

James W. Burks, III, M.D.,	1954 –1978
Herbert B. Christianson, M.D.,	1962 – 1993
George A. Farber, Sr., M.D.,	1973 –1983
Marvin E. Chernosky, M.D.,	1984 –1998
Lee T. Nesbitt, Jr., M.D.,	1984, 1988, 1991 – 2013
Kenneth E. Greer, M.D.,	1994 –1998
Emily F. Omura, M.D.,	1996 – 2000
Jack Lesher, M.D.,	1999 – 2000
Marilyn Ray, M.D.,	2001 – 2008
Ted Rosen, M.D.,	2001 – 2003, 2005 – 2008
Leonard Gately,	2003 – 2007, 2012
Clay J. Cockerell, M.D.,	2009
Tom Davis, M.D.,	2009
Jacqueline Sasaki, M.D.,	2010, 2011, 2012
Tom Nicotri, M.D.,	2010
Sandra Osswald, M.D.,	2011 – present
Travis Vandergriff, M.D.,	2013 – present
Carlos Ricotti	2021—present

Dermatopathology Panelists:

Robert G. Freeman, M.D.,	1959 – 1996
Richard J. Reed, M.D.,	1960 – 1996; 2002
Omar Sangueza, M.D.,	2002 - 2003
Charles V. Perniciaro, M.D.,	2002 – 2017
Clay J. Cockerell, M.D.,	1992 – present
Thomas L. Davis, M.D.,	2004 - 2005, 2007 – present
Mark Cappel, M.D.,	2013 – 2022
Dipti Anand, M.D.	2022—present

Administrative Secretaries:

Marilyn Brown,	1971-1983
Julia Brinkman,	1984-1990
Pam Vitez	2002-2006
Tami Golden	2007
Janet Love	2010-2012
Tami Golden	2013
Brenda Wander	2014, 2015
Sondra Cockerell	2017-2019
Chris Bandel	2020-present

PAST HONORED GUEST DERMATOPATHOLOGISTS

1954	Hamilton Montgomery, M.D.
1955	Marcus Caro, M.D.
1956	Herman Beerman, M.D
1957	J. Walter Wilson, M.D.
1958	Walter R. Nickel, M.D.
1959	Walter F. Lever, M.D.
1960	Hamilton Montgomery, M.D.
1961	Richard Stoughton, M.D.
1962	Frederick J. Szymanski, M.D.
1963	Richard K. Winkelman, M.D.
1964	Robert W. Goltz, M.D.
1965	Herman Beerman, M.D.
1966	Elson B. Helwig, M.D.
1967	Hermann Pinkus, M.D.
1968	James H. Graham, M.D.
1969	Arthur Hyman, M.D.
1970	Louis Winer, M.D.
1971	Herbert Z. Lund, M.D.
1972	Daniel Richfield, M.D.
1973	Lewis Shapiro, M.D.
1974	Waine C. Johnson, M.D.
1975	Robert W. Goltz, M.D.
1976	Walter R. Nickel, M.D.
1977	Edward Wilson-Jones, M.D.
1978	A. Bernard Ackerman, M.D.
1979	John T. Headington, M.D.
1980	Loren E. Golitz, M.D.
1981	Amir H. Mehregan, M.D.
1982	Martin Brownstein, M.D.
1983	Wilma Bergfeld, M.D.
1984	Ronald J. Barr, M.D.
1985	William A. Caro, M.D.
1986	Richard J. Reed, M.D.
1987	Antoinette Hood, M.D. & Evan Farmer, M.D.
1988	James H. Graham, M.D.
1989	N. Scott McNutt, M.D.
1990	W. P. Daniel Su, M.D.
1991	Kurt Stenn, M.D.
1992	Clifton R. White, M.D.
1993	David N. Silvers, M.D.
1994	Philip LeBoit, M.D.
1995	Daniel J. Santa Cruz, M.D.
1996	Hideko Kamino, M.D.
1997	Raymond L. Barnhill, M.D.
1998	Neal S. Penneys, M.D.
1999	George P. Lupton, M.D.
2000	James E. Fitzpatrick, M.D.
2001	Alan S. Boyd, M.D.
2002	Lawrence (Larry) Gibson, M.D.
2003	Thomas D. Horn, M.D.
2004	Dirk Elston, M.D.
2005	Joan Guitart, M.D.
2006	John C. Maize, Sr., M.D.
2007	Anita Gilliam, M.D.
2008	Iftikhar Ahmed, M.D.
2009	Mark Jacobson, M.D.
2010	Beth Ruben, M.D.
2011	Mary S. Stone, M.D.
2012	Lori Lowe, M.D
2013	Adam Rubin, M.D.
2014	Martin C. Mihm, Jr., M.D.
2015	Margot Peters, M.D.
2016	Pedram Gerami, M.D.
2017	Shawn Cowper, M.D.
2018	Tammie Ferringer, M.D.
2019	Soon Bahrami, M.D.
2020	Lori Prok, M.D.
2021	Whitney High, M.D.

Table of Contents

10	Compound Spitz Nevus	Matthew Goldberg, MD Daniel Rivlin, MD Harold Rabinovitz, MD
11	Focal Dermal Mucin With Mixed Infiltrate And Papillary Dermal Edema	Manjot Mashiana, DO Matthew Reynolds, PA Scott Dinehart, MD Clay Cockerell, MD
12	Onycholemmal Cyst Of Right Great Toenail	Caroline Savoie, MD, PGY-II Elizabeth Bucher, MD Maria Bao Loc Trung, MS-II
13	Traumatic Neuroma Of The Tongue	Marc Gebara, MS Julia Accetta, MD Laura Williams, MD
14	Unusual Pityriasis Lichenoides	Kaycee Nguyen, BS Chris Bandel, BS Clay Cockerell, MD Claire Reddick, MD
15	Cryptococcal Appearance Of Acute Iododerma On Histology	Julien Bourgeois, BS Ryan E. Lawrence, MD Bethaney Vincent, MD Alicia Cool, MD
16	Bullous Sweet's Disease	Randi Goldstein MD Kyle Owens MD
17	Acute-Onset Vesicular Eruption In A Patient With Refractory "Sweet Syndrome"	Soo Hyun Choi, BA Ian Watson, MD Carole Bitar, MD Erin Boh, MD, PhD
18	Interstitial Granulomatous Drug Reaction Associated With Tocilizumab With Features Resembling Granuloma Annulare	Kevin Pennycook, DO Aditya Sood, MS4 Heather Allen, PA-C Dipti Anand, MD Kristopher McKay, MD
19	Pityriasis Rubra Pilaris	Haley Caire, MD Rachel Parks, BS Christopher Burkenstock, MD
20	Lichen Planus Pigmentosus	Andrew Joselow, MD
21	Lichen Planus Pemphigoides	Jason Dominguez, PA Robert Chappell, MD Carlos Ricotti, MD

22	Darier Disease	Madeleine DeGrange, MS4 George Jeha, MD Christopher Burkenstock, MD
23	Spongiotic Dermatitis With Eosinophils	Alexandra Streifel, MD G. William Poche, MD
24	Neutrophilic Eccrine Hidradenitis In A Pediatric Patient With Acute Myeloid Leukemia Treated With Cytarabine And Daunorubicin	Michelle Toker, BS Haley Heibel, MD Bijal Amin, MD Benedict Wu, DO, PhD
25	Atrophoderma of Pasini and Pierini	Christopher Wong, DO Ashleigh Hermann, DO Michael Carletti, DO Stephen E. Weis, DO Clay J. Cockerell, MD, MBA
26	Mid Dermal Elastolysis	Carlos Ricotti, MD Christopher Logas, DO
27	Short Bowel Syndrome Presenting As Necrolytic Erythema	Yasmin Hadian, DO, MS Aditya Sood, MS4 Janette Walsh NP-C Kristopher McKay, MD Dipti Anand, MD
28	Necrolytic Erythema	Rosemary Prejean, MD Deborah Hilton, MD Nick Culotta, MD
29	Pediatric Reactive Granulomatous Dermatitis	Sujitha Yadlapati, MD Thomas Davis, MD
30	Chronic Granulomatous Reaction Secondary To Microblading Pigment	Saba Suleman, MPH Maria Villegas, MD Thomas Davis, MD Charles S. Stevens, MD Patricia Castaneda, MD
31	Subcutaneous Fat Necrosis of the Newborn	Morgan Fletcher, MD Tue Felix Nguyen, BS Alison Messer, MD
32	Bullous Pemphigoid in an Infant	Fred Ghali, MD Chris Bandel, BS Clay Cockerell, MD
33	Interface Dermatitis In An African-American Pediatric Male Patient	Daniel Nguyen, DO Steven E. Weis, DO Clay J. Cockerell, MD

34	Discoid Presentation Of Nonscarring Alopecia Of Active Systemic Lupus Erythematosus	Timothy Freeman, BS Dipti Anand, MD Kris McKay, MD
35	Rowell Syndrome	Manjot Mashiana, DO Gary Cox, MD Clay J. Cockerell, MD
36	Atypical Lobular Panniculitis Suspicious For Subcutaneous Panniculitis-Like T Cell Lymphoma (Sptcl) Vs. Lupus Erythematosus Panniculitis	Christian Scheufele, DO Stephen E. Weis, DO Amber Souers, MD
37	Possible Temporal Arteritis	Julia Just, Medical Student Angela Styles, MD Chris Bandel, BS Clay Cockerell, MD
38	Cutaneous T Cell Lymphoma With Papillary Dermal Edema	Manjot Mashiana, DO Matthew Reynolds, PA Scott Dinehart, MD Clay Cockerell, MD
39	Blastic Plasmacytoid Dendrocytic Cell Neoplasm	Henry Ho, DO Clay Cockerell, MD
40	Mature Palsmactyoid Dendritic Proliferation Associated With AML	Caroline Lee, M.D. Betty Chung, DO Ardenne Martin, BS, MS, L3
41	Granulomatous Mycosis Fungoides Initially Simulating Granulomatous Pseudolymphoma	Kaycee Nguyen, BS Chris Bandel, BS Clay Cockerell, MD Molly Warthan, MD
42	Extranodal Nk/T-Cell Lymphoma, Nasal Type	Ian Watson, MD Sarah Fillingim, BS Bing Han, MBBS Howard Ragland, MD
43	Unusual Lymphomatoid Papulosis With Plasma Cells	Jason Klein, MD, PhD Travis Vandergriff, MD Clay Cockerell, MD
44	Langerhans Cell Histiocytosis Associated With Jak2-Mutation Related Primary Myelofibrosis Treated With Ruxolitinib	Aditya Sood, MS4 Keith Pennycook, DO Felicity Warren, MD Kristopher McKay, MD Dipti Anand, MD

45	Primary Cutaneous Acral CD8+ T-Cell Lymphoproliferative Disorder	Katherine Edwards, MD Aleena Hajek, BS Henry Lim, MD Ben Friedman, MD
46	Plasmacytoma	Kezia Surjanto, BS Ashley Allen, MD Bing Han, MD Alun Wang, MD Carole Bitar, MD
47	Cutaneous Endometriosis	Angela Yen Moore, MD Kara Hurley, MS4
48	Proliferating Pilomatricoma	Zach Thornton BA Long Ly MD Andrea Murina, MD
49	Cutaneous Coccidioidomycosis	Jason Dominguez, PA Robert Chappell, MD Carlos Ricotti, MD
50	Erythrasma	Manjot Mashiana, DO Gary Cox, MD Clay Cockerell, MD
51	Pitted Keratolysis	Christopher Wong, DO Stephen E. Weis, DO Clay J. Cockerell, MD, MBA
52	Hansen’s Disease	Kelsey Hayes, MS4 Akhil Abraham, MS4 Renato Oracion, MD Clay J. Cockerell MD Chris Bandel, BS
53	Cutaneous Tuberculosis	Alejandra Méndez, MPH Caroline Daggett, MD Bethany Vincent, MD
54	*Mycobacterium Marinum* Infection	Chris Logas, DO Carlos Ricotti, MD
55	Cutaneous Secondary (Nodular) Syphilis	Soo Hyun Choi, BA Ashley Allen, MD Alicia Cool, MD
56	Disseminated Histoplasmosis In A Renal Transplant Patient	Hannah Dakin, MD John Miller, MD Trent Massengale, MD

EXTRAMAMMARY "MAMMARY" PAGET'S DISEASE OF AXILLARY BREAST TISSUE

Case No. 1 **PRESENTER:** Kaycee Nguyen, BS
Chris Bandel, BS
Clay Cockerell, MD
Beth Jester, MD
Dallas, TX
Santa Fe, NM

History and Physical Examination: A 63-year-old female with no personal or family history of breast cancer presented with a changing mole on her left axilla.

Imaging: MRI of the right breast was unremarkable, but the left breast was notable for an area of asymmetry with an approximately 1 cm plaque-like enhancement along the left axillary dermis. MRI also showed mild left axillary lymphadenopathy. Mammogram revealed no suspicious mass, architectural distortion, or clustered microcalcifications. Ultrasound demonstrated a single, somewhat suspicious left axillary lymph node with focal cortical thickening measuring up to 6 mm. PET/CT scan showed FDG avidity with several left axillary lymph nodes, with the largest measuring 1.5 x 1.0 cm.

Laboratory Data: Needle core biopsy of the left axillary lymph node demonstrated metastatic adenocarcinoma, consistent with infiltrating ductal carcinoma of mammary origin. Grade 1. GATA3 positive. Ki-67 10-20%. Immunohistochemistry showed greater than 90% ER positive, 90% PR positive, and HER-2 0-1+. Hereditary breast cancer testing was positive for a mutation in BRCA2.

Histopathology: Shave biopsy of mole on left axilla demonstrated an intraepidermal malignant neoplasm with pagetoid cells arranged in nests but also solitary cells above the dermoepidermal junction throughout the epidermis. Immunoperoxidase stains were positive for cytokeratin, strongly positive for cytokeratin-7 (CK7), and negative for SOX-10.

Clinical Course: Patient was referred to a breast surgeon. Left axillary skin excisional biopsy showed ductal infiltrating carcinoma measuring 8 mm, grade 2, with lymphovascular invasion. Left axillary lymph node dissection of two nodes were both positive for metastatic disease with 5 mm of extranodal extension present. Six left axillary lymph nodes were removed, one with macrometastases measuring 10 mm. Chemotherapy with Taxotere plus Cytoxan was initiated, followed by radiation treatment.

Diagnosis: Malignant pagetoid neoplasm in axilla, Paget's disease of axillary breast tissue

Points of Emphasis: Given the location, patient's dark skin type, and clinicopathological manifestations, this most likely represents a manifestation of a form of extramammary Paget's disease (EMPD), possibly related to the excess axillary breast tissue. Extramammary Paget's disease describes an adenocarcinoma derived from the skin or skin appendages in areas with apocrine glands. Initial presentation involves a slow-growing erythematous plaque with well-defined edges, excoriations, fine scales, and lichenification[1]. EMPD typically presents in the fifth and sixth decades of life as an eczematous, scaling plaque, rather than an ulceration seen with mammary Paget's disease[2]. A negative mammogram does not exclude the presence of tumors, so ultrasound is particularly useful in these cases.

Histopathology reveals epidermal large, rounded Paget cells organized in solid groups forming nests with abundant and pale cytoplasm, usually containing pleomorphic and hyperchromatic nuclei[1, 2]. In more advanced cases, the dermis exhibits reactive characteristics, such as telangiectasia, inflammation, and ulceration. Immunohistochemistry demonstrating overexpression of CK7 is indicative of Paget's disease, and Paget cells express p53, p21, cyclin D1, Ki-67, Her-2 oncoprotein and androgen receptors[1]. The best treatment options include surgical excision and Mohs micrographic surgery, though relapses are very common due to their ill-defined clinical margins. Imiquimod and photodynamic therapy may also be used[1, 3]. Early detection and prompt screening for underlying malignancy is essential to minimizing morbidity.

References:

1. Lopes Filho LL, Lopes IM, Lopes LR, Enokihara MM, Michalany AO, Matsunaga N. Mammary and extramammary Paget's disease. An Bras Dermatol. 2015;90(2):225-31.
2. Lancer HA, Moschella SL. Paget's disease of the male breast. Journal of the American Academy of Dermatology. 1982;7(3):393-6.
3. Chong T, Chia HY, Chen QP, Cheng S, Chio M, Tan A, et al. A 15-year retrospective review of extramammary Paget disease (EMPD) at National Skin Centre, Singapore. Journal of the American Academy of Dermatology. 2018;79(3, Supplement 1):AB3.

PRIMARY CUTANEOUS BREAST CARCINOMA IN A MALE

Case No. 2

Presenter: Kelsey Hayes, MS4[1]
Akhil Abraham, MS4[2]
Susannah Collier MD[3]
Clay J. Cockerell MD[2]
Christopher Bandel BS[2]
[1]Aurora, MO
[2]Dallas, TX
[3]Oklahoma City, OK

History: A 73-year-old male presents to the clinic for evaluation of a skin lesion on his left chest. The lesion is localized to the left periareolar region. The lesion is becoming larger in size. The patient denies any previous history of skin conditions or lesions. The patient denies a family history of melanoma. Patient has a personal history of diabetes mellitus, anxiety disorder, hypertension, and hypercholesterolemia. Review of systems is pertinent only for fever blisters/cold sores and anxiety.

Physical Examination: The patient appears well nourished and well developed with normal vital signs. Patient is alert and oriented x3 and cranial nerves II-XII are intact. Physical examination reveals a tan well subscribed lesion on the left nipple that measures approximately 0.7 cm x 0.7 cm. The skin is hyperpigmented. Shave biopsy is subsequently performed on the lesion.

Histopathology: Malignant basophilic neoplasm with cords and strand of cells in close contiguity with the epidermis. Small ducts are seen as well.

Diagnosis: A diagnosis of primary cutaneous male breast carcinoma is made based on clinical presentation and histopathology results.

Clinical Course: The patient was notified of the biopsy results.

Points of Emphasis: Of particular interest, the morphology is similar to that which may be seen in a basal cell variant of breast carcinoma, and given the location, that diagnosis is strongly favored. Many cases of male breast cancer present as a palpable mass that may cause skin dimpling or nipple retraction. Basal-like breast carcinoma is an aggressive subtype affecting epithelial cells in the basal layer of the adult mammary gland. These cells tend to lack expression of human epidermal growth factor receptor 2 and steroid hormone receptors, limiting therapeutic options.

References:

1. Toft, D. J., & Cryns, V. L. (2011). Minireview: Basal-like breast cancer: from molecular profiles to targeted therapies. *Molecular endocrinology (Baltimore, Md.)*, *25*(2), 199–211. https://doi.org/10.1210/me.2010-0164
2. Javidiparsijani S, Rosen LE, Gattuso P. Male Breast Carcinoma: A Clinical and Pathological Review. Int J Surg Pathol. 2017 May;25(3):200-205. doi: 10.1177/1066896916675953. Epub 2016 Nov 10. PMID: 27831530

CUTANEOUS METASTATIC ADENOCARCINOMA

Case No. 3

PRESENTERS: Sonja Lipman, MS4
Nicholas Culotta, MD
Deborah Hilton, MD
New Orleans, LA

History:
The patient is a 65-year-old female with a past medical history of stage IV adenocarcinoma of the lung with metastasis to the brain and spinal cord, hypertension, and basal cell carcinoma of the skin who presents with a three-month history of a progressively enlarging lesion located on the left chest wall. Patient reports that the lesion is mildly tender on palpation. She denies any trauma to the area, similar lesions elsewhere, drainage, and bleeding. The patient does report recent onset shortness of breath and fatigue. The patient is followed closely by oncology and has stable disease since diagnosis in 2018, status post excisional biopsy of brain lesion (2018), radiotherapy, and continued chemotherapy with Osimertinib. She has been stable until this hospital admission. The patient is currently admitted to the hospital for a malignant pleural effusion.

Physical Examination:
Left Chest Wall: 1.4 cm firm dark red to purple, well-defined, mobile papulonodule with minimal overlying scale.

Laboratory Data: None

Histopathology:
Left Chest Wall, punch biopsy: metastatic adenocarcinoma compatible with pulmonary primary tumor. Biopsy demonstrated infiltrating tumor composed of polygonal cells with variable hyperchromatic nuclei, enlarged nucleoli, and luminal vacuoles arranged in nests and glandular patterns within the dermis. The cells stained positively with MOC31 and stained strongly with TTF1 and CK20. Additionally, D2-40 immunostaining demonstrated tumor cells within lymphatics. CD20 and CK7 were negative.

Clinical Course:
With the new diagnosis of adenocarcinoma metastatic to the skin, oncology planned to discontinue immunotherapy and initiate IV chemotherapy. Subsequently, she had worsening of her malignant pleural effusion and expired due to acute hypoxic respiratory failure before the new treatment plan could be implemented.

Diagnosis: Cutaneous Metastatic Adenocarcinoma

Points of Emphasis:
Cutaneous metastases of primary internal malignancies represent a rare and ominous phenomenon. All histological types of lung cancer can metastasize to the skin; however, only 1-12% of patients with primary lung cancer develop cutaneous metastasis.[1] Most cutaneous metastases arise in a body region near the primary tumor, and clinically appear as solitary or multiple nodules. Lung metastases to the skin can occur via lymphatic or hematogenous routes. The prognosis of patients with lung cancer and cutaneous metastasis is poor, with a mean survival of three to six months.[2]

References:

1. Mollet TW, Garcia CA, Koester G. Skin metastases from lung cancer. Dermatol Online J. 2009 May 15;15(5):1. PMID: 19624979.

2.Pathak S, Joshi SR, Jaison J, Kendre D. Cutaneous metastasis from carcinoma of lung. Indian Dermatol Online J. 2013 Jul;4(3):185-7. doi: 10.4103/2229-5178.115512. PMID: 23984229; PMCID: PMC3752471.

CUTANEOUS SQUAMOUS CELL CARCINOMA WITH SUPERIMPOSED BACTERIAL INFECTION

Case No. 4

PRESENTER: Alexander Jafari, MD, MPH
Virginia Barton, MD
New Orleans, LA

History:
A 19-year-old male with severe generalized recessive dystrophic epidermolysis bullosa (RDEB) presented on 6/20/22 with a new lesion on his right leg that originally appeared in Fall 2021 but had become painful and started draining pus for the past two weeks. He states that the lesion appears to be infected and has grown over the last three months. He has never had a lesion like this before and denies any other similar lesions currently. The patient denies fever, cough, nausea, vomiting, diarrhea, or other systemic symptoms.

Physical Examination:
Constitutional: cachectic young man sitting with contractures of legs and arms
Skin: type V; sclerotic, scarred-down skin with bleeding and denuded areas with depigmentation over entire body.
Lower legs wrapped in Kerlex. Several hemorrhagic tense bullae, but most of skin is bloody and with some open, crusted bullae over areas.
Right lower extremity with large (> 20 cm) well-demarcated malodorous necrotic and vegetative ulcer with purulent material just lateral to the knee. Second ulcer located just inferiorly to the first ulcer.
Ulcerated and heme-crusted plaques on the right upper extremity.
Joints: Mitten deformities of the hands. Joint contractures of the knees.

Laboratory Data:

- Culture aerobic, wound, R leg, 6/20/22: *Pseudomonas aeruginosa, Proteus vulgaris,* group A Streptococci

Histopathology:
1. Skin, right leg distal, biopsy:
- Squamous cell carcinoma, invasive, moderately differentiated. (Note: The tumor involves the deep and peripheral margins).
2. Skin, right leg proximal, biopsy:
- Squamous cell carcinoma, invasive, moderately differentiated. (Note: The tumor involves the deep and peripheral margins).

Right inguinal lymph node, FNA:
- Negative for metastatic carcinoma and high-grade lymphoma
- Numerous lymphocytes present consisted with sampled lymph node

Imaging:
PET/CT 7/27/22
Impression:

- Enlarged, centrally necrotic bilateral inguinal lymph nodes, concerning for metastatic lymphadenopathy.
- Expansile, sclerotic change within the mid left tibial diaphysis with nonuniformly increased metabolic activity and associated circumferential cortical thinning without evidence of erosion, for which the differential includes endosteal reaction related to

chronic infectious/inflammatory process versus invasive or de novo neoplastic process, given overlying thickened hypermetabolic cutaneous tissue.

Clinical Course:
At dermatology visit on 6/20/22, two punch biopsies were performed of the right leg ulcer and wound culture was obtained. The patient was started on trimethoprim/sulfamethoxazole (800-160mg) BID. The patient continued with frequent wound care in the interim. Patient was referred to surgical oncology who recommended PET/CT for staging in addition to discussion at cutaneous oncology tumor board. Given the extent of the tumor, likely metastasis, and inability to heal properly due to history of RDEB, it was decided that radiation therapy for palliative treatment coupled with immunotherapy should be considered over more invasive approaches like amputation. Patient was subsequently seen by radiation oncology and medical oncology resulting in a plan for palliative radiation therapy along with pembrolizumab.

At follow-up dermatology visit on 8/9/22, the lesion was noted to be more vegetative and malodorous. Bactrim was discontinued and the patient was started on ciprofloxacin 500mg q12h for 14 days for the superimposed bacterial infection and *P. aeruginosa* coverage.

Patient underwent US-guided biopsy of the right inguinal lymph node with IR on 9/6/22, which was negative for metastatic carcinoma and high-grade lymphoma.

Diagnosis:
Cutaneous squamous cell carcinoma (cSCC) with superimposed bacterial infection

Points of Emphasis:

- Association between RDEB and cSCC
- Delays in diagnosis and treatment of skin cancers in patients with RDEB
- Pathogenesis of cSCC in EB patients and its aggressive behavior in this particular population
- Lack of standard of care for treatment of cSCC in EB patients. Tailoring treatment plan and management to patient preferences: determining whether cSCC is amenable to surgery vs. amputation vs. cytotoxic chemotherapy vs. local radiation +/- immunotherapy.
    - Immunotherapy options for cSCC: immune-checkpoint inhibitors like cemiplimab (as depicted in BMJ Case Reports article on cSCC in a 30-year-old woman with RDEB), pembrolizumab

References:

1. Duong T, Wong D, Barrett A, Price H. Successful use of immunotherapy to treat advanced cutaneous squamous cell carcinoma in recessive dystrophic epidermolysis bullosa. *BMJ Case Rep*. 2021;14(2):e238966. Published 2021 Feb 26. doi:10.1136/bcr-2020-238966
2. Bonamonte D, Filoni A, De Marco A, et al. Squamous Cell Carcinoma in Patients with Inherited Epidermolysis Bullosa: Review of Current Literature. *Cells*. 2022;11(8):1365. Published 2022 Apr 17. doi:10.3390/cells11081365
3. Montaudié H, Chiaverini C, Sbidian E, Charlesworth A, Lacour JP. Inherited epidermolysis bullosa and squamous cell carcinoma: a systematic review of 117 cases. *Orphanet J Rare Dis*. 2016;11(1):117. Published 2016 Aug 20. doi:10.1186/s13023-016-0489-9

POSSIBLE SPINDLE CELL NEOPLASM

Case No. 5 **PRESENTER:** Jacqueline La MS
Jacqueline Witt MD
Andrea Murina MD
Carole Bitar MD
Bing Han MD
Alun Wang MD
New Orleans, LA

History: A 65-year-old woman presented with a new growth to the right first toe which began ten months prior. Her medical history was notable chronic venous stasis dermatitis of bilateral lower legs with ulcers and schizophrenia. Family history was unremarkable.

Physical Examination: A 3 cm flesh-colored firm pedunculated nodule was present on the medial aspect of the right 1st phalanx with overlying verrucous change. There were pebbly verrucous keratoses on the dorsal left foot.

Laboratory Data: Complete blood count showed anemia with hemoglobin of 11.5 gm/dL (normal 12.0-16.9 gm/dL). CRP was negative. TSH was elevated at 8.68 (normal 0.5-5.0 ulU/mL).

Histopathology: A 4 mm punch biopsy from the medial aspect of the right toe mass demonstrated skin with spindle cells in a fascicular pattern with mixed lymphoplasmacytic and histiocytic inflammatory infiltrate, and thickened collagen bundles. The epidermis showe pseudoepitheliomatous hyperplasia. The histiocytes were negative for s100 stain. No microorganisms were highlighted by PAS and Fite stains. CD34 immunohistochemical stain was negative. CD68 stained a few dermal fibroblasts.

Clinical Course: An Xray of the foot demonstrated acroosteolysis involving the 1st distal phalanx. The patient was referred to Orthopaedic surgery for full excision given clinical concern for a fibrohistiocystic growth and is scheduled to undergo excision in October 2022 (final pathology pending).

Diagnosis: Scar

Points of Emphasis:
Given the size and rapid growth of the lesion, we are concerned that the small 4 mm punch biopsy was not deep enough or a large enough sample to provide adequate tissue for the pathologic diagnosis. Our differential includes spindle cell neoplasms, such as superficial acral fibromyxoma (SAF), dermatofibrosarcoma protuberans (DFSP), cellular digital fibroma, acquired digital fibrokeratoma, and supernumerary digit. These lesions may be difficult to discern from each other as they share common clinical features. Correlation of the microscopic patterns and the immunochemistry may be useful in discerning lesions. SAF is comprised of both spindle fibroblasts and stellate cells in a whorled pattern in the dermis. The tumor borders range from lobular with a pushing margin to an irregular, infiltrative margin. DFSP is comprised of spindle cells in a whorled pattern and displays an extensive infiltration into the subcutaneous fat. Benign SAF must be distinguished from DFSP, as DFSP has intermediate malignant potential. Immunochemistry is useful in discerning the two when these features are not apparent on a restricted biopsy. SAF stains positively for CD34, epithelial membrane antigen (EMA), and CD99. Although DFSP is diffusely CD34 positive, it does not stain for EMA. [1,2,3] Similarly to

DFSP, cellular digital fibroma is diffusely CD34 positive, EMA negative, and is comprised of spindle fibroblasts oriented in parallel or whorled patterns; however, cellular digital fibroma does not extend beyond the mid reticular dermis. In contrast to the previous lesions, acquired digital fibrokeratoma may be focally CD34 positive or CD34 negative. Microscopically, acquired digital fibrokeratoma displays hyperkeratosis acanthosis in the epidermis and thick collagen bundles vertically oriented to the dermis. [4] These distinct histopathological patterns may exclude the diagnosis of supernumerary digit; nevertheless, the rapid growth of the lesion makes supernumerary digit unlikely, as this is a congenital defect. [5] We are awaiting final pathology from excision of the lesion and hope to have this prior to the case conference.

References:

1. Romano RC, Fritchie KJ. Fibrohistiocytic Tumors. Clin Lab Med. 2017 Sep;37(3):603-631. doi: 10.1016/j.cll.2017.05.007. Epub 2017 Jun 15. PMID: 28802503.

2. Sawaya JL, Khachemoune A. Superficial acral fibromyxoma. Int J Dermatol. 2015;54(5):499-508. doi: 10.1111/ijd.12750. Epub 2015 Mar 13. PMID: 25772615.

3. Fetsch JF, Laskin WB, Miettinen M. Superficial acral fibromyxoma: a clinicopathologic and immunohistochemical analysis of 37 cases of a distinctive soft tissue tumor with a predilection for the fingers and toes. Hum Pathol. 2001 Jul;32(7):704-14. doi: 10.1053/hupa.2001.25903. PMID: 11486169.

4. Cohen PR, Alpert RS, Calame A. Cellular Digital Fibroma: A Comprehensive Review of a CD34-Positive Acral Lesion of the Distal Fingers and Toes. Dermatol Ther (Heidelb). 2020 Oct;10(5):949-966. doi: 10.1007/s13555-020-00418-3. Epub 2020 Jul 29. PMID: 32728848; PMCID: PMC7477026.

5. Ali M, Mbah CA, Alwadiya A, Nur MM, Sunderamoorthy D. Giant fibrokeratoma, a rare soft tissue tumor presenting like an accessory digit, a case report and review of literature. Int J Surg Case Rep. 2015;10:187-90. doi: 10.1016/j.ijscr.2015.03.041. Epub 2015 Mar 25. PMID: 25863992; PMCID: PMC4430176.

PRIMARY MALIGNANT CUTANEOUS PERIVASCULAR EPITHELIOID CELL TUMOR (PEComa)

Case No. 6 **PRESENTER:** Philip R. Cohen, MD
Shumei M. Kato, MD
Christof P. Erickson, MD
Antoanella Calame, MD
Razelle Kurzrock, MD
San Diego, CA
La Jolla, CA
Milwaukee, WI

History: A 43-year-old man presented with a painless tumor of 5-months duration that appeared as a small raised area and increased to its current size over a period of 3 months.

Physical Examination: A 10 x 10 x 5 mm flesh-colored exophytic scaly nodule with central ulceration and a surrounding collarette of epithelium--suggestive of a squamous cell carcinoma (keratoacanthoma variant)--was on the extensor surface of the distal left forearm just proximal to the wrist (Fig 1).

Laboratory Data: Genomic analysis of his blood showed a *FANCC* germline mutation. Next generation sequencing of the tumor showed four pathogenic genomic aberrations involving *BIRC3*, *FANCC*, *TP53*, and *TSC1* genes.

Histopathology: There is crust and epidermal ulceration. The epidermis forms a collarette that extends into the dermis and surrounds a tumor of predominantly epithelioid cells and many capillaries. Spindle tumor cells (at the tumor periphery) and some multinucleated giant cells are noted. The presence of increased mitotic activity (3 mitoses/10 high power fields) and scattered nuclear pleomorphism (high-grade nuclear atypia) classifies the tumor as malignant (Figs 2 and 3). The tumor cells express BCL1, caldesmon (Fig 4), and MiTF (Fig 5) strongly; CD68, desmin, and SMA patchy and variably; and HMB-45 weakly (Fig 6). The tumor cells do not stain for ALK-1, CD31, CD34, CD45, EMA, MART1, pancytokeratin, TP63, and S100. Ki67 focally stains about 10% of the cells at the tumor periphery, but only stains less than 1% of the tumor.

Clinical Course: Systemic work-up (CT and CT-PET scans of the thorax, abdomen, and pelvis) were negative for metastases. A wide local excision of the tumor site was performed. After 15 months of follow-up, there has been no recurrence or metastasis.

Diagnosis: Primary malignant cutaneous perivascular epithelioid cell tumor (PEComa)

Points of Emphasis: Systemic PEComa (sysPEComa) is a rare neoplasm that expresses melanocytic and smooth muscle markers; the female to male ratio (FMR) ranges from 4:1 to 7:1. Cutaneous PEComa (cutPEComa) is extraordinarily rare; it has only been described in 67 patients: primary benign (60), primary malignant (5), and metastatic malignant (2). The FMR of cutPEComa is 2:1; it typically presents as an asymptomatic, slowly growing, nodule of <2 cm on the leg. CutPEComa consists of blood vessels and tumor cells that are epithelioid, or spindled, or both; the most reliable markers are MiTF (100%), HMB45 (94%), and NKIC3 (94%) for melanocytes and SMA (43%) and desmin (40%) for smooth muscle. Similar to this man's tumor, genomic alterations in malignant sysPEComa frequently involve *TSC1* and *TSC2* genes (mTOR activators), and *TFE3* fusions. The FDA approved nab-sirolimus (a mTOR inhibitor) on November 23, 2021, for the treatment of PEComas.

References:

1. Cohen PR, Kato SM, Erickson CP, Calame A, Kurzrock R. Cutaneous perivascular epithelioid cell tumor (PEComa): case report and world literature review of clinical and molecular characteristics. Dermatol Online J. 2022;28(1). PMID: 35499412.
2. Cohen PR, Kurzrock R. Dermatology disease-directed targeted therapy (D^3T^2): the application of biomarker-based precision medicine for the personalized treatment of skin conditions--precision dermatology. Dermatol Ther (Heidelb). 2022; in press.

SELF-TREATED MELANOMA MASQUERADING AS NON-MELANOTIC LESION

Case No. 7 **PRESENTER:** Sidra Ibad, BA
Chris Bandel, BS
Clay Cockerell, MD
Paul Cabiran, MD
Dallas, TX
Highlands, NC

History: A 69-year-old male retired veterinarian with a prior history of non-melanoma skin cancer presented with a new, non-healing lesion on his right forearm. He had been treating the lesion himself with liquid nitrogen that he had obtained from a colleague. He had administered several treatments and when the lesion failed to respond, he presented to a dermatologist for evaluation.

Physical Examination: A 2 cm x 1.5 cm nummular plaque located on the right extensor surface distal suggestive of either actinic keratosis or squamous cell carcinoma. A shave biopsy was performed followed by an excision.

Histopathology: The shave biopsy revealed evidence of melanoma in-situ. The re-excision revealed a deep, nodular melanoma with extension to the subcutaneous fat focally with foci of neurotropism. The thickness measurement was somewhat problematic because of the tracking of the tumor into the the septa of the subcutis which likely caused the measurement to be artifactually thicker as the bulk of the lesion was approximately 2.5 mm in thickness. There was 1 mitotic figure/mm^2. The pathologic stage is pT4a.

Laboratory Data: Right axillary sentinel lymph node biopsy for stage IIA or IIC melanoma showed involvement of one lymph node negative for metastatic melanoma. Immunohistochemical stains used a cocktail of MART-1 and HMB-45 and Ki67 antibodies to detect micrometastasis.

Clinical Course: The patient is being treated with adjuvant therapy and close monitoring.

Diagnosis: Amelanotic malignant melanoma with delayed diagnosis due to self-treatment.

Points of Emphasis: There have been multiple reports of melanomas that masquerade as benign conditions include basal cell carcinoma, diabetic foot ulcers, keratoacanthomas, lichenoid keratoma, and eczema among others. Concerningly, these cases are found to be locally metastatic, have positive sentinel lymph nodes and other poor prognostic variables because of delays in diagnosis[1]. There are also case reports of verrucous melanoma masquerading as seborrheic keratosis[2], malignant melanoma mimicking spindle nevus and epithelioid cell nevus[3], melanoma mimicking basal cell carcinoma[4], and subungual malignant melanoma mimicking squamous cell carcinoma and pigmented Bowen's disease mimicking cutaneous melanoma[5-6]. Melanomas have also been shown to mimic additional cancers, including hepatocellular carcinoma[7] and gastric carcinoma[8]. These cases suggest the significance of immunohistochemistry in establishing melanoma diagnoses, including for lesions that may initially seem benign.

Because liquid nitrogen is known to be cytotoxic to melanocytes, it is possible in this case that the patient's self-treatment may have altered its clinical appearance making it appear amelanotic. The original biopsy taken by shave technique failed to sample the deeper dermal component. Amelanotic melanomas are often misdiagnosed by clinicians and biopsies are often taken in this fashion which may result in under-diagnosis as in this case.

References:

1. Detrixhe, A., Libon, F., Mansuy, M., Nikkels-Tassoudji, N., Rorive, A., Arrese, J. E., Quatresooz, P., Reginster, M. A., & Nikkels, A. F. (2016). Melanoma masquerading as nonmelanocytic lesions. *Melanoma research*, *26*(6), 631–634. https://doi.org/10.1097/CMR.0000000000000294
2. Tran, P. T., Truong, A. K., Munday, W., Alexanian, S., & Levins, P. (2019). Verrucous melanoma masquerading as a seborrheic keratosis. *Dermatology online journal*, *25*(2), 13030/qt1m07k7fm.
3. Wong, T. Y., Suster, S., Duncan, L. M., & Mihm, M. C., Jr (1995). Nevoid melanoma: a clinicopathological study of seven cases of malignant melanoma mimicking spindle and epithelioid cell nevus and verrucous dermal nevus. *Human pathology*, *26*(2), 171–179. https://doi.org/10.1016/0046-8177(95)90034-9
4. Wang, Y., & Guo, Y. (2020). Peripheral Palisading in Melanoma Mimicking Basal Cell Carcinoma: A Case Report. *The American Journal of dermatopathology*, *42*(9), 677–679. https://doi.org/10.1097/DAD.0000000000001636
5. Robinette, J. W., Hahn, P. J., Jr, & Naples, J. J. (1999). Subungual malignant melanoma mimicking a squamous cell carcinoma. *Journal of the American Podiatric Medical Association*, *89*(10), 540–542. https://doi.org/10.7547/87507315-89-10-540
6. Stante, M., de Giorgi, V., Massi, D., Chiarugi, A., & Carli, P. (2004). Pigmented Bowen's disease mimicking cutaneous melanoma: clinical and dermoscopic aspects. *Dermatologic surgery : official publication for American Society for Dermatologic Surgery [et al.]*, *30*(4 Pt 1), 541–544. https://doi.org/10.1111/j.1524-4725.2004.30173.x
7. A Case of Metastatic Melanoma in the Liver Mimicking Hepatocellular Carcinoma J Liver Cancer. 2021;21(1):92-96. Published online March 31, 2021 DOI: https://doi.org/10.17998/jlc.21.1.92
8. Monti, M., Guidoboni, M., Oboldi, D., Bartolini, G., Pieri, F., Ruscelli, S., Passardi, A., Ridolfi, L., De Rosa, F., Sullo, F. G., & Frassineti, G. L. (2021). Melanoma metastasis mimicking gastric cancer: a challenge that starts from diagnosis. *Therapeutic advances in gastroenterology*, *14*, 1756284821989559. https://doi.org/10.1177/1756284821989559
9. Engin, B. (n.d.). *Case report / Olgu Sunumu - dergipark.org.tr*. Retrieved October 3, 2022, from https://dergipark.org.tr/tr/download/article-file/213441

ATYPICAL SPINDLE CELL PROLIFERATION WITH OVERLYING ATYPICAL KERATINOCYTIC PROLIFERATION

Case No. 8

PRESENTER: Kaycee Nguyen, BS[1]
Chris Bandel, BS[1]
Clay Cockerell, MD[1]
Wade Smith, MD[2]
Dallas, TX[1]
Cleburne, TX[2]

History and Physical Examination: An 81-year-old male presented with a several-month history of a 6 x 4 mm firm, erythematous to violaceous papule on the extensor aspect of the left forearm.

Histopathology: Shave biopsy from the left forearm revealed proliferation of spindle cells in the dermis with a somewhat fibromyxoid stroma and lymphocytic infiltrate arranged in small aggregations. A few atypical cells were admixed within the myxoid stroma, and there was one mitotic figure seen in the lesion with no ulceration. Overlying, there was an atypical proliferation of cells, most of which appeared to be keratinocytes, although there was some pigmentation. Immunoperoxidase stains were diffusely and strongly positive for S100 protein and SOX-10. There was also some evidence of intraepidermal melanocytic proliferation in addition to the atypical keratinocytic proliferation. Pathologic stage = pT3a.

Clinical Course: The patient was referred to a surgeon for wide excision of the melanoma, followed by sentinel node biopsy.

Diagnosis: Atypical spindle cell neoplasm, most compatible with malignant melanoma, desmoplastic type, greater than 2.5 mm in thickness

Points of Emphasis: Desmoplastic melanoma (DM) is a variant of spindle cell melanoma, usually found on chronically sun-damaged skin. DM can present clinically as cystic or scar-like lesions, or as amelanotic nodules or plaques[1]. On histopathology, DM is characterized by spindle-shaped melanoma cells with fibroblastic proliferation. Enlarged and/or atypical cells are often scattered amongst the spindled cells, and neurotropism is a common associated feature[2, 3]. Immunohistochemistry markers, such as S-100 protein and SOX10, can be used to distinguish DM from non-melanocytic simulants. Typically, scars consist of a scattered pattern of S-100 positive cells, whereas desmoplastic melanoma is strongly and homogenously positive for S-100. However, S100 staining does not differentiate DM from Schwann cell tumors, such as neurofibromas or Schwannoma[1].

The diagnosis of desmoplastic melanoma (DM) is challenging since its clinical presentation is often non-specific with a banal morphology and difference to other conventional types of melanoma[3]. As a result, DMs are often excised and sent in as cysts, fibromas, or basal cell carcinomas. This specimen, in particular, mimicked a neurofibroma under microscopy. Given the atypical cells present in the spindle cell component in some foci, as well as the intraepidermal melanocytic process even though focal, this specimen is highly suggestive of desmoplastic malignant melanoma, which may simulate other conditions such as fibroma clinically. The lesion measures greater than 2.5 mm in thickness, which would be classified as Clark’s level IV.

Treatment options include wide local excision (first-line) and local radiation therapy.

References:

1. Chen LL, Jaimes N, Barker CA, Busam KJ, Marghoob AA. Desmoplastic melanoma: a review. J Am Acad Dermatol. 2013;68(5):825-33.
2. Hui JI, Linden KG, Barr RJ. Desmoplastic malignant melanoma of the lip: a report of 6 cases and review of the literature. J Am Acad Dermatol. 2002;47(6):863-8.
3. McCarthy SW, Scolyer RA, Palmer AA. Desmoplastic melanoma: a diagnostic trap for the unwary. Pathology. 2004;36(5):445-51.

DYSPLASTIC NEVUS TO MELANOMA IN SITU AFTER GENE EXPRESSION PROFILE AND EXPERT REVIEW

Case No. 9

PRESENTER: Matthew Goldberg, MD
Daniel Rivlin, MD
Harold Rabinovitz, MD
New York City, NY
Miami Beach, FL
Plantation, FL

History: 84-year-old man with a history of melanoma.

Physical Examination: A changing pigmented lesion of the right lateral inferior chest.

Laboratory Data:
The dermoscopy features of an atypical network, gray dots/granules, and scar like depigmentation are most suggestive of a melanoma on sun-damaged or an atypical melanocytic nevus. Reflectance confocal microscopy demonstrated overall features suggestive of a malignant neoplasm were observed. There is an atypical honeycomb pattern and numerous dendritic structures infiltrating the epidermis. There is an atypical meshwork pattern with junctional thickening and bright cells infiltrating the rete ridges. The differential diagnosis is a dysplastic nevus with severe atypia vs melanoma on sun-damaged skin. An excision with 5mm margins is recommended.

Histopathology: Examination by H&E staining was performed to rule-out malignant melanoma in association with nevus. The margins are free of neoplasm. Immunostains for Melan-A and S-100 were medically necessary to characterize this proliferation, and the diagnosis is confirmed. All positive and negatives controls were examined and stained appropriately as required. A diagnosis of melanocytic nevus, junctional Clark's type (so-called "dysplastic nevus") was made. The slides were sent for 23-gene expression profile (MyPath Melanoma) testing, which gave a 2.8 score (gene expression profile suggestive of malignant neoplasm). Expert second opinion review of the H&E slide favored a diagnosis of melanoma in situ. The second opinion described the case as a challenging case. The lesion is broad and poorly circumscribed, with a predominance of single cells, posing a differential diagnosis of a junctional dysplastic nevus vs a dysplastic nevus-like form of melanoma in situ, with an area of partial regression, in which there is loss of rete ridges and a subjacent band-like lymphocytic infiltrate. This area has suprabasilar scatter of single melanocytes as well. The margins appear clear in the planes of section examined.

Clinical Course: An excision with 5mm margins was performed. The patient has been recurrent free to date, with total body skin exams every three months.

Diagnosis: Melanoma in situ

Points of Emphasis: This was a difficult case where the clinical presentation did not correlate with the initial pathology report. After seeking ancillary testing using GEP, the lack of correlation was further highlighted. A second opinion supported the difficulty of this case by describing the histopathological details and finally supporting a melanoma in situ diagnosis.

References:
1. Clarke, L. E. et al. Clinical validation of a gene expression signature that differentiates benign nevi from malignant melanoma. J Cutan Pathol 42, 244–252 (2015).

2. Jaimes, N. et al. Clinical and dermoscopic characteristics of melanomas on nonfacial chronically sun-damaged skin J Am Acad Dermatol 72,1027-1035 (2015)
3. Shahriari N, et al. Reflectance confocal microscopy features of melanomas on the body and non-glabrous chronically sun-damaged skin J Cutan Path 45, 754-759 (2018)

COMPOUND SPITZ NEVUS

Case No. 10

PRESENTER: Matthew Goldberg, MD
Daniel Rivlin, MD
Harold Rabinovitz, MD
New York City, NY
Miami Beach, FL
Plantation, FL

History: A 38-year-old woman was referred by her dermatologist for evaluation of a pigmented lesion on the inner thigh.

Physical Examination: The lesion is multicolored with irregular borders.

Laboratory Data: Dermoscopic evaluation revealed a disorganized globular pattern and focal pseudopods surrounding a large, eccentric, dark structureless area. Reflectance confocal microscopy (RCM) showed an abundance of dendritic and pagetoid cells in the epidermis, an atypical ring pattern with cells infiltrating the rete, and junctional thickening. The lesion had features in common with melanoma and Spitz nevus. It was excised with a margin for diagnostic purposes.

Histopathology: Examination by H&E staining was performed. Occult pagetoid melanocytes were noted in the epidermis. Both single and aggregated atypical spindle and epithelioid melanocytes were visible at the dermoepidermal junction with a discohesive confluence of nests. Melanophages were visible.
The surgical margins were clear, and the differential diagnosis was Clark's nevus with spitzoid features vs. a melanoma, 0.25mm Breslow depth. The slides were sent for 23-gene expression profile (MyPath Melanoma) testing, which gave a -5.3 score (gene expression profile suggestive of benign neoplasm). Expert second opinion review of the H&E slide favored a diagnosis of compound Spitz nevus.

Clinical Course: No further treatment was deemed necessary as the lesion was fully excised. The patient is being followed every three months the first year with total body skin checks and to date has no signs of recurrence.

Diagnosis: Compound Spitz nevus

Points of Emphasis: Accurate distinction between Spitz or Clark's nevi and thin melanoma may require multiple diagnostic modalities. Gene expression profile testing[1] provided an objective result to confirm the benign nature of the lesion. Clinicians should be aware that pagetoid Spitz nevi have been reported to disproportionately occur on the thigh in female patients.[2]

References:

1. Clarke, L. E. *et al.* Clinical validation of a gene expression signature that differentiates benign nevi from malignant melanoma. *J Cutan Pathol* **42**, 244–252 (2015).
2. Chung, J., Yuan, Z. M. & Lee, J. B. Clinical and histopathological features of pagetoid Spitz nevi of the thigh. *J Cutan Pathol* **47**, 1143–1149 (2020).

FOCAL DERMAL MUCIN WITH MIXED INFILTRATE AND PAPILLARY DERMAL EDEMA

Case No. 11 **PRESENTER:** Manjot Mashiana, DO
Matthew Reynolds, PA
Scott Dinehart, MD
Clay Cockerell, MD
Russellville, Arkansas
Dallas, TX

History:
We have a 53-year-old female with pertinent medical conditions including actinic keratosis and leukemia, treated with radiation therapy, who was originally seen on June 16, 2022 for acne rosacea. Her treatment plan consisted of doxycycline daily, metronidazole nightly, and rhofade cream in the morning. She presented for a follow up for further evaluation and management as well as new concerning lesion on left hand. She has no known drug allergies, no history of melanoma.

Physical Examination:
Erythematous papules and pustules and centrofacial erythema and telangiectasia distributed on the right cheek, left cheek, and nose.

Dermatitis with pustulation on 1st web space of left hand.

Histopathology:
There is prominent papillary dermal edema and, in the dermis, an infiltrate of lymphocytes, some histiocytes, and abundant mucin. The clinical photograph reveals a dome shaped papule in the web space between the thumb and first finger. Few, if any, neutrophils were seen in the infiltrate.

In the context of the patient having a known history of leukemia, this could represent a manifestation of a paraneoplastic papular process but is not typical of Sweet's disease. Occasionally, histiocytoid Sweet's disease may give a pattern somewhat similar to this, but the presence of the abundant mucin is an unusual finding.

Clinical Course:
A punch biopsy was taken of the dermatitis on the left hand. Patient was instructed to apply betamethasone dipropionate twice daily on the lesion.

She was to continue doxycycline, metronidazole, and start Nasalcrom mixed with cerave and apply adequate sunscreen to treat her rosacea. Rhofade was discontinued as it did not work for the patient.

At her two-week follow-up visit, the biopsied lesion on the 1st webspace of her left-hand was healing well and no further follow up was required for it.

Diagnosis:
Focal dermal mucin with mixed infiltrate of papillary dermal edema

Points of Emphasis:
The skin is not only a barrier, but it also plays an important role in the immune system of the body - full of antigen-presenting cells, epidermal cells capable of producing cytokines and influence T-cell maturation, and small amounts of mucin.

Mucin can be used as a diagnostic clue in dermatology. Localized mucinoses include lichen myxoedematosus, acral persistent popular mucinosis, mucinous naevus, myxoid or digital mucous cyst, angiomyxoma, and focal cutaneous mucinosis. Focal cutaneous mucinosis, a harmless solitary lesion, less than 1cm in diameter can be removed by surgical excision if required, which is usually done at the time of biopsy.

Cutaneous lymphoid infiltration is challenging for precise diagnosis as a large subset of neoplastic and nonneoplastic lesions may present this way. Clinical correlation and histopathological patterns with immunophenotyping and molecular studies can help arrive at a diagnosis.

Histiocytoid Sweet syndrome (SS) is a rare inflammatory disease variant of the classical Sweet syndrome associated with diabetes mellitus and internal malignancies, whether malignant neoplasms or hematological malignancies. Papillary dermal edema with infiltration of histiocyte-like cells can be visualized in the upper dermis. In literature, medication induced histoid SS has been reported in a patient treated with bortezomib for multiple myeloma. Our patient is being treated with Sprycel (dasatinib) for her leukemia. This may be the first case of histoid SS induced by dasatinib. However, histoid SS is not typically mucin rich, this could potentially be another variant of Sweet Syndrome, or part of a spectrum of the same disease.

References: (At least two recent pertinent published references)
1. Saikia UN, Madakshira MG. Histopathological approach to cutaneous lymphoid infiltrate. Indian J Dermatopathol Diagn Dermatol 2019;6:1-13

2. A. Fernandez-Flores, M. Saeb-Lima. Mucin as a diagnostic clue in dermatopathology. J Cutan Pathol, 43 (11) (2016), pp. 1005-1016.

3. Ching-Fu Huang, Bai-Yao Wu, Fang-Yih Liaw, Wei-Ming Wang, Chien-Ping Chiang, Histiocytoid Sweet syndrome: Report of two cases and review of the literature. Dermatologica Sinica. Volume 30, Issue 2, 2012. Pages 71-74

ONYCHOLEMMAL CYST OF RIGHT GREAT TOENAIL

Case No. 12

Presenter: Caroline Savoie, MD, PGY-II
Elizabeth Bucher, MD
Maria Bao Loc Trung, MS-II
New Orleans, LA

History:
Patient is a 69-year-old female with past medical history breast and colon cancer who presented for screening full body skin exam. One lesion of concern was noted to her R great toenail.

Physical Examination:
On exam, patient was found to have an irregular, hyperpigmented lesion of her R great toenail extending from the lateral portion of the eponychium halfway down the nailbed.

Laboratory Data:
No laboratory data was obtained.

Histopathology:
The sections show areas of nail unit epithelium including epithelium consistent with nail matrix epithelium. Within the dermis, there are many onycholemmal cysts present. Both fully formed and early onycholemmal cysts are present. These onycholemmal cysts are interpreted to be reactive in nature.

Clinical Course:
Given benign nature of lesion, no further treatment was required. Patient will return for 6-month follow-up later this year.

Diagnosis:
The lesion was ultimately diagnosed as a subungual onycholemmal cyst.

Points of Emphasis:

Subungual onycholemmal cysts (SOC), also known as subungual epidermoid inclusions or subungual epidermoid cysts, are rare, benign nail bed abnormalities of the dermis[1]. Lesions typically affect single digits, particularly thumbs or great toenails, and may present with nail bed pigmentation, onychodystrophy, ridging, or thickening[2,3]. While these lesions are often asymptomatic and discovered incidentally, some cause tremendous pain[1, 2].

SOC are clinically relevant given similar presentation to subungal melanoma. Early identification not only prevents permanent nail deformities, but it allows for timely and proper treatment as well. Onycholemmal melanoma presents in elderly patients as a well-circumscribed, subungual discoloration that is slow growing and may ulcerate[1]. Differentiation and diagnosis require full thickness biopsy, most commonly with a 3- or 4-mm punch[4]. On histopathology, SOC exhibit small cysts lined with atypical squamous epithelium and filled with keratin, an absent granular layer, and have solid nests and strands of atypical keratinocytes within the dermis[1]. Features more suggestive of onycholemmal melanoma include predominate clear cells and cystic component and evidence infiltrative growth pattern[1,2].

Due to rare nature of SOC, there is no clear guideline for treatment. While some resources suggest surgical removal for management, others suggest no further intervention is required given benign nature of lesion[1-4]. Most importantly, accurate diagnosis prevents unnecessary treatment and anxiety[4]. Thus, SOC must be considered when discussing a differential for tumors of the nail unit.

References:

1. Busquets J, Banala M, Campanelli C, Sahu J, Lee JB. Subungual onycholemmal cyst of the toenail mimicking subungual melanoma. Cutis. 2016 Aug;98(2):107-10.
2. Geisler S, Steinkraus V, Loeser CR. A rare case of a subungual epidermoid cyst treated by surgical excision maintaining maximal functionality. JAAD Case Rep. 2020 Dec 27;8:67-70.
3. Lydrup E, Pedersen Pilt A, Schmidt VJ, Trøstrup H. Subungual Onycholemmal Cysts: A Case Report. Case Rep Dermatol. 2021 Jul 19;13(2):394-398.
4. Telang GH, Jellinek N. Multiple calcified subungual epidermoid inclusions. J Am Acad Dermatol. 2007 Feb;56(2):336-9.

TRAUMATIC NEUROMA OF THE TONGUE

Case No. 13 **PRESENTER:** Marc Gebara, MS
Julia Accetta, MD
Laura Williams MD
New Orleans, LA

History:
A 77-year-old female presented to clinic for evaluation of a tongue mass that had been present since November 2019. Mass is located to the left lateral tongue and is nontender. She complained of occasional tingling with hot and cold foods and reports loss of taste and appetite. She stated that she had a dry mouth but denies dry eyes or other symptoms of systemic lupus erythematosus. She is overall healthy, denies smoking or history of tobacco use, and receives routine dental care. She was previously evaluated by ENT and had a "benign biopsy." She had a positive ANA titer and had previously been treated with plaquenil, azathioprine, and leflunomide.

Physical Examination:

General: well appearing female
HEENT - left lateral tongue somewhat atrophic **-** fleshy studded plaque with increased vascular recruitment noted to the left lateral aspect of the tongue. Patient with some difficulty speaking with movement of tongue. Left lateral teeth with intact fillings with 1-2 teeth missing.

No similar changes visible elsewhere in mouth, on buccal mucosa. Roof of mouth with central protrusion consistent with palatal tori.

Laboratory Data:
Culture negative for Mycobacterium tuberculosis; + ANA per ENT in the past

Histopathology:
Two full thickness punch biopsies were obtained with 4mm punch and sent to dermatopathology and tissue culture

- Initial pathology report described lobular proliferation of capillary vessels in the dermis mixed with inflammatory cells. Small nerve seen within specimen. Consistent with pyogenic granuloma
- Revised pathology report described well-circumscribed nodule in the dermis composed of spindle cells forming well-developed fascicles. There was no prominent cytologic atypia visible. Tumor cells are noted on S100, NSE, and neurofilament but not CD31 or EMA stains. Consistent with traumatic neuroma.

Clinical Course:
At initial visit there was concern for multiple mucosal neuroma versus erythroplakia versus squamous cell carcinoma prompted biopsy, results as above. She was prescribed Gabapentin capsule 300mg nightly and increase as tolerated and was counseled to minimize friction and trauma to the tongue. Options were reviewed including referral to ENT or oral surgeon for dental intervention and/or continued medical management and observation. At the most recent follow up visit 6 months later, tongue was swollen and quality of life had declined. ENT referral is scheduled in 3 months.

Diagnosis:
Pyogenic granuloma from pathology report but suspected lesion is persistent due to location next to teeth causing ongoing trauma. Because of this the diagnosis was revised to traumatic neuroma.

Points of Emphasis:
Pyogenic granulomas (PG), more accurately described as lobular capillary hemangiomas, are common, harmless, vascular tumors found in the skin and mucus membranes.[1,2] They can present across all age groups and genders, typically appearing as smooth or lobulated red exophytic vascular nodules of varying size.[1] They are known to bleed and are the driving reason for a patient to seek physician consult.[1] PGs are associated some medications including retinoids, oral contraceptives, gefitinib, cabecitabine, and afatinib.[3-6] PG can be confused with other vascular tumors including Kaposi sarcoma, Kaposi form hemangioendothelioma, infantile hemangiomas, and vascular malformations.[1] The treatment yielding the best prognosis is excision.[7]

A traumatic neuroma is an amalgamation of neural fibers and connective tissue that forms post nerve injury, normally presenting as a firm, oval, white, slow growing, palpable, and painful nodule no bigger than 2cm and can be associated with paresthesia over the injured area.[8] These have been reported 1-10 years following a variety of surgical procedures including radical neck dissection,[9] limb amputation,[10] parotidectomy,[11] abdominal surgery,[12] orthognathic surgery,[13] and tooth extraction.[14] Because less invasive treatment methods do not have a good record, neuromas that significantly affect quality of life often require surgical excision.[15]

References:

1. Wollina U, Langner D, França K, Gianfaldoni S, Lotti T, Tchernev G. Pyogenic Granuloma - A Common Benign Vascular Tumor with Variable Clinical Presentation: New Findings and Treatment Options. Open Access Maced J Med Sci. 2017 Jul 13;5(4):423-426. doi: 10.3889/oamjms.2017.111. PMID: 28785323; PMCID: PMC5535648.
2. Sarwal P, Lapumnuaypol K. Pyogenic Granuloma. [Updated 2021 Nov 21]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-.
3. Simmons BJ, Chen L, Hu S. Pyogenic granuloma association with isotretinoin treatment for acne. Australas J Dermatol. 2016;57(4):e144-5.https://doi.org/10.1111/ajd.12418PMid:27885661
4. Massa A, Antunes A, Varela P. Pyogenic granuloma in a patient on gefitinib. Acta Med Port. 2016;29(6):416.https://doi.org/10.20344/amp.6343PMid:27865223
5. Fujiwara C, Motegi SI, Sekiguchi A, Amano H, Ishikawa O. Pyogenic granuloma possibly associated with capecitabine therapy. J Dermatol. 2016.https://doi.org/10.1111/1346-8138.13691
6. Inoue A, Sawada Y, Nishio D, Nakamura M. Pyogenic granuloma caused by afatinib: Case report and review of the literature. Australas J Dermatol. 2017;58(1):61-2.https://doi.org/10.1111/ajd.12423PMid:26603180
7. Giblin AV, Clover AJ, Athanassopoulos A, Budny PG. Pyogenic granuloma - the quest for optimum treatment:an audit of treatment of 408 cases. J Plast Reconstr Aesthet Surg. 2007;60(9):1030–5. https://doi.org/10.1016/j.bjps.2006.10.018 PMid:17478135

8. Foltán R, Klíma K, Spacková J, Sedý J. Mechanism of traumatic neuroma development. Med Hypotheses. 2008 Oct;71(4):572-6. doi: 10.1016/j.mehy.2008.05.010. Epub 2008 Jul 2. PMID: 18599222.
9. Iida S, Shirasuna K, Kogo M, Matsuya T. Amputation neuroma following radical neck dissection--report of 3 cases. J Osaka Univ Dent Sch. 1995 Dec;35:1-4. PMID: 9206461.

10. Singson RD, Feldman F, Staron R, Fechtner D, Gonzalez E, Stein J. MRI of postamputation neuromas. Skeletal Radiol. 1990;19(4):259-62. doi: 10.1007/BF00191667. PMID: 2353210.
11. Lee EJ, Calcaterra TC, Zuckerbraun L. Traumatic neuromas of the head and neck. Ear Nose Throat J. 1998 Aug;77(8):670-4, 676. PMID: 9745184.
12. Kwon JH, Ryu SW, Kang YN. Traumatic neuroma around the celiac trunk after gastrectomy mimicking a nodal metastasis: a case report. Korean J Radiol. 2007 May-Jun;8(3):242-5. doi: 10.3348/kjr.2007.8.3.242. PMID: 17554193; PMCID: PMC2627419.
13. Appiah-Anane S. Amputation neuroma: a late complication following sagittal split osteotomy of the mandible. J Oral Maxillofac Surg. 1991 Nov;49(11):1218-20. doi: 10.1016/0278-2391(91)90420-q. PMID: 1941337.
14. Arribas-García I, Alcalá-Galiano A, Gutiérrez R, Montalvo-Moreno JJ. Traumatic neuroma of the inferior alveolar nerve: a case report. Med Oral Patol Oral Cir Bucal. 2008 Mar 1;13(3):E186-8. PMID: 18305440.
15. Burchiel KJ, Johans TJ, Ochoa J. The surgical treatment of painful traumatic neuromas. J Neurosurg. 1993 May;78(5):714-9. doi: 10.3171/jns.1993.78.5.0714. PMID: 8468601.

UNUSUAL PITYRIASIS LICHENOIDES

Case No. 14

PRESENTER: Kaycee Nguyen, BS
Chris Bandel, BS
Clay Cockerell, MD
Claire Reddick, MD
Dallas, TX

History: A 48-year-old man presented for a two-week follow-up after a biopsy, submitted with the clinical impression of “rash, pityriasis rosea, or tinea versicolor,” was read as probable pityriasis rosea. His eruptions involved the trunk, left scapular back, both thighs, and both upper extremities. The eruptions were most prominent on his extremities, sparing the distal extremities, neck, and face. He denied any itchiness or fever and reported no improvement with triamcinolone acetonide 0.1% topical cream. A second punch biopsy was performed and submitted along with clinical photographs.

Physical Examination: Skin examination was notable for pink/erythematous coalescing annular patches, some with fine scaling and slightly accentuated borders that were much more prominent on the extremities than the trunk.

Histopathology: Original punch biopsies revealed a superficial perivascular infiltrate of lymphocytes and histiocytes with extravasated erythrocytes, slight spongiosis, and mounds of parakeratosis overlying. Follow-up punch biopsies included the abdomen right flank (A) and left lateral proximal forearm (B). Histopathology demonstrated a superficial perivascular infiltrate of lymphocytes that obscured the dermoepidermal junction focally with extravasated erythrocytes and broad zones of overlying parakeratosis. Scattered dyskeratotic keratinocytes were also noted. There were similar changes in both, although more florid in (A).

Clinical Course: The patient was treated with doxycycline and tetracycline but did not return for further evaluation.

Diagnosis: Unusual pityriasis lichenoides

Points of Emphasis: Pityriasis lichenoides (PL) consists of an uncommon group of inflammatory skin disorders of unknown etiology, though Epstein-Barr virus, *Toxoplasma gondii*, and HIV are the most frequently associated infectious triggers[1]. There has been no ethnic nor geographic predilection for pityriasis lichenoides reported[2]. PL is characterized by small, raised pink spots, and subtypes include pityriasis lichenoides et varioliformis acuta (PLEVA) and pityriasis lichenoides chronica (PLC). PLEVA and PLC portray two ends of a continuous spectrum and represent the acute and chronic forms, respectively. Due to the characteristic gross features of each, clinical photos are useful in distinguishing between the two forms. Clinical presentations range from acute papular lesions that form pseudovesicles, some of which develop necrotic crusts (PLEVA) to small, scaling papules at different stages of development (PLC)[1], and histopathologic presentation of the two variants have considerable overlap. Conventional PL is typically marked by variable epithelial hyperplasia with confluent parakeratosis and neutrophils, scattered necrotic keratinocytes, and interface dermatitis. There is also a dense inflammatory infiltrate with epidermal lymphocytic exocytosis and focal extravasation of erythrocytes[3]. Of note, PL may occasionally present with large plaque-like lesions with dyspigmentation and can sometimes imitate pityriasis rosea histologically, which explains the findings in the punch biopsy of (A). While the features are not unequivocally diagnostic of pityriasis lichenoides, PL diagnosis is favored. The most effective treatments include phototherapy, heliotherapy, and antibiotics[1, 4].

References:

1. Klein PA, Jones EC, Nelson JL, Clark RAF. Infectious causes of pityriasis lichenoides: a case of fulminant infectious mononucleosis1 1This supplement is made possible through an unrestricted educational grant from Stiefel Laboratories to the American Academy of Dermatology. Journal of the American Academy of Dermatology. 2003;49(2, Supplement 2):151-3.
2. Bowers S, Warshaw EM. Pityriasis lichenoides and its subtypes. Journal of the American Academy of Dermatology. 2006;55(4):557-72.
3. Borra T, Custrin A, Saggini A, Fink-Puches R, Cota C, Vermi W, et al. Pityriasis Lichenoides, Atypical Pityriasis Lichenoides, and Related Conditions: A Study of 66 Cases. The American Journal of Surgical Pathology. 2018;42(8):1101-12.
4. Zang JB, Coates SJ, Huang J, Vonderheid EC, Cohen BA. Pityriasis lichenoides: Long-term follow-up study. Pediatric Dermatology. 2018;35(2):213-9.

CRYPTOCOCCAL APPEARANCE OF ACUTE IODODERMA ON HISTOLOGY

Case No. 15

PRESENTER:
Julien Bourgeois, BS
Ryan E. Lawrence, MD
Bethaney Vincent, MD
Alicia Cool, MD
New Orleans, LA

History: 66-year-old female with a PMH of diabetes, hypertension, hyperlipidemia, and GERD was admitted after undergoing multiple contrasted imaging studies for work-up of possible drug-induced lupus due to hydralazine use. The patient reported acute development of skin lesions that were polymorphic, some leaking fluid. She reported areas of involvement to her hands, buttocks, legs, and right elbow. Lesions were more painful than itchy. She also endorsed acute onset of mouth ulcers. The patient denied a prior personal history of autoimmune disease but did endorse a family history of POEMS syndrome and SLE. On admission, she was started on high-dose steroids for concerns of drug-induced SLE.

Physical Examination:
Constitutional: Positive for fatigue and malaise.
Skin: Positive for widespread, polymorphic eruptive rash with erythematous patches and hemorrhagic and vascular papules.

Laboratory Data:
ANA positivity with a homogeneous pattern and a titer of 1:5120, +MPO, +PR3, +histone, and +CCP antibody, and ESR/CRP. Notably, low normal WBC without any obvious trends on the differential, mild AKI Cr (1.3, baseline 0.8-1.0).

Histopathology:
1. Skin, right elbow, punch biopsy:
- NEUTROPHILIC DERMATOSIS WITH FIBRINOID NECROSIS OF THE DERMAL VESSELS AND PROMINENT HALOED ACELLULAR STRUCTURES RESEMBLING CRYPTOCOCCAL ORGANISMS, HIGHLY SUSPICIOUS FOR IODODERMA.

2. Skin, left thigh, shave biopsy:
- NEUTROPHILIC DERMATOSIS WITH FIBRINOID NECROSIS OF THE DERMAL VESSELS AND PROMINENT HALOED ACELLULAR STRUCTURES RESEMBLING CRYPTOCOCCAL ORGANISMS, HIGHLY SUSPICIOUS FOR IODODERMA.

1. Sections show variable epidermal spongiosis. Vacuolar interface alteration is not appreciated along the dermal-epidermal junction. Within the superficial and deep dermis, there is a fairly diffuse infiltrative neutrophilic infiltrate in association with necrotic cellular debris. Infiltration of vessel walls by neutrophils with associated fibrinoid necrosis of blood vessels is present. Throughout the dermis, there are numerous prominent multifocal hay load acellular structures resembling cryptococcal organisms. However, PAS and GMS stains are negative for fungi. Appropriately reactive controls were reviewed.

2. Sections show pseudoepitheliomatous epidermal hyperplasia with intraepidermal and superficial dermal abscess formation. There is associated epidermal necrosis and associated hemorrhage. Within the superficial and deep dermis, there is a fairly diffuse infiltrative neutrophilic infiltrate in association with necrotic cellular debris. Infiltration of vessel walls by

neutrophils with associated fibrinoid necrosis of blood vessels is present. Throughout the dermis, there are numerous prominent multifocal haloed acellular structures resembling cryptococcal organisms. However, PAS and GMS stains are negative for fungi. Appropriately reactive controls were reviewed.

Clinical Course:
The patient finished a course of methylprednisolone, and iodide-containing medications were held with complete resolution of dermatologic symptoms.

Diagnosis: Iododerma in the setting of Hydralazine-induced SLE.

Points of Emphasis:
Acute iododerma is a rare complication of iodide exposure, and it can be difficult to diagnose based solely on clinical findings due to its diverse presentation [1]. Though it classically presents as an acneiform eruption in a sebaceous distribution, iododerma may cause hemorrhagic papules, plaques, or bullae [2]. Although it is usually self-limited, it may rapidly worsen, especially in the setting of repeated contrast exposures or renal failure [1]. It may mimic cutaneous lupus, vasculitis, Sweet's syndrome, or other neutrophilic dermatoses [3]. Histologically, it typically shows a diffuse neutrophilic dermal infiltrate; rarely it has been described to mimic a cryptococcal infection with prominent haloed structures [4,5,6].

Our patient was exhibiting features of drug-induced SLE and underwent multiple imaging studies with iodide contrast. Shortly after, she had acute onset of painful, erythematous, hemorrhagic papules and bullae. Of note, the patient had a slight AKI on admission likely secondary to complications of hydralazine. Prior research has pointed to an increased likelihood of iododerma in the setting of renal insufficiency [7, 8]. In addition, iododerma in the setting of hydralazine use and iodinated contrast exposure has previously been noted in multiple case studies [4, 9].

This case points out several critical factors in recognizing iododerma. Specifically, we note:
- An interesting clinical appearance of iododerma in the setting of hydralazine use and iodinated contrast exposure.
- The importance of recognizing rapid and acute skin and mucosal eruptions after contrast administration, especially in the setting of diagnostic workup.
- The potential for increasingly severe lesions with repeated or continuous iodide exposure.
- A unique cryptococcal-like, acellular appearance on histology.

References:

1. Seeker, P.M. and V.F. Shiu, Iododerma Following Exposure to Iodine: A Case of Explosive Acneform Eruption Overnight. Cutis, 2022. 109(2): p. E29-e30.
2. Vandergriff, T.W. and K.B. Yancey, Iododerma following radioactive iodine ablation of the thyroid for Graves disease. J Drugs Dermatol, 2011. 10(9): p. 1070-1.
3. Stavert, R., et al., Vegetative plaques and hemorrhagic pustules. Iododerma. JAMA Dermatol, 2013. 149(10): p. 1231-2.
4. Runge, M., et al., Iodine toxicity after iodinated contrast: New observations in iododerma. JAAD Case Rep, 2020. 6(4): p. 319-322.
5. Frankel, A.J., et al., Acute onset of a vesiculopustular rash in an ICU patient. Dermatol Online J, 2014. 20(1): p. 21249.
6. Lim Hua Liang J, Lee Siong See J. Acute iododerma presenting as cryptococcoid neutrophilic dermatosis: a clinicopathological pitfall and interesting findings gleaned from a review of the

literature. J Cutan Pathol. 2022 Aug 11. doi: 10.1111/cup.14310. Epub ahead of print. PMID: 35950337.
7. Soria, C., et al., Vegetating iododerma with underlying systemic diseases: report of three cases. J Am Acad Dermatol, 1990. 22(3): p. 418-22.
8. Rothman, L.R., et al., Iododerma following serial computed tomography scans in a lung cancer patient. J Drugs Dermatol, 2013. 12(5): p. 574-6.
9. Chang, M.W., et al., Iododerma after computed tomographic scan with intravenous radiopaque contrast media. J Am Acad Dermatol, 1997. 36(6 Pt 1): p. 1014-6.

BULLOUS SWEET'S SYNDROME

Case No. 16 **PRESENTER:** Randi Goldstein MD
Kyle Owens MD
New Orleans, LA

History: 67 F initially presented to an outside hospital with shortness of breath associated with hoarseness and unintentional weight loss. She was found to have a large laryngeal mass with airway compromise requiring tracheostomy. Her hospital course was complicated by the development of a tender and pruritic cutaneous eruption on her right arm that initially consisted of erythematous papules. The rash then evolved into a more diffuse eruption consisting of flaccid bullae involving her bilateral upper extremities, posterior neck, face, and upper back.

Physical Examination:
Multiple scattered tense and flaccid bullae to bilateral upper extremities and chest. Eroded erythematous papules and violaceous papules to upper back and posterior neck. Scattered erythematous and violaceous papules to nose, peri-orbital, and peri-nasal areas. Violaceous papules to ears and right hand

Laboratory Data:
WBC 5.1, neutrophil 73.3%, absolute neutrophil count 3.74, immature granulocyte 0.8, ESR >120, CRP 90, Positive ANA >2560, positive p-ANCA and MPO, elevated urine free light chains.

Histopathology: 1. Skin, right arm (proximal): Punch biopsy for H&E: sections show a heavy superficial dermal infiltrate which is predominantly neutrophilic. In areas there is separation of the epidermis and papillary dermis. GMS, AFB, and Gram stains are negative for fungal, mycobacterial, and bacterial organisms, respectively. Some the lymphocytes appear somewhat devitalized. CD34 highlights stroma. Stains were reviewed with adequate positive controls. 2. Skin, right arm (distal): Punch biopsy for DIF: Sent to Mayo Clinic for direct immunofluorescence: There is no direct immunofluorescence evidence for a specific dermatosis. The histological findings (see microscopic description) support the clinical impression of bullous Sweet's syndrome.

Clinical Course: PT was evaluated at OSH by Dermatology who based upon history and clinical evaluation was concerned for Sweet Syndrome (SS). Biopsy was performed and patient was initiated on IV steroids and transferred for ENT evaluation of her laryngeal mass. Upon transfer, she was re-evaluated by dermatology and repeat skin biopsy along with DIF was performed. The patient was continued on IV steroids for a total of 5 days with rapid improvement in her skin lesions. The patient was then transitioned to oral steroids and completed a 28-day course. Both skin biopsies were consistent with Bullous SS and DIF was negative as above. The etiology of her bullous SS has yet to be elucidated. Although her laryngeal mass was the presumed cause, prior to the rash she was treated with antibiotics for a URI. In the literature malignancy, infection and drugs have all been implicated as causes. The biopsy of her laryngeal mass favored benign squamous papilloma and ENT is planning for a submandibular gland biopsy to fully rule out malignancy. Oncology currently finds malignancy unlikely and due to negative malignancy work up the patient follows with rheumatology for a possible autoimmune etiology of her laryngeal mass. Despite positive autoimmune labs, there are no other clinical or laboratory data that would be diagnostic of an autoimmune illness. The patient does have submandibular and parotid gland enlargement which could be suggestive of Sjogren/IgG4 disease/sarcoid; however, there are no other clinical findings to suggest these diagnoses. The patient's precipitating agent leading to her cutaneous eruption remains unclear at this time but further investigation is ongoing and is concerning for a rheumatologic etiology.

Diagnosis: Bullous Sweet's Syndrome

Points of Emphasis:
Bullous SS is an uncommon variant of SS that can present as flaccid or tense blisters on the acral surfaces, face, extremities, and trunk. The exact incidence of bullous SS is unknown, although up to 30% of patients with SS may present with bullae. SS has been described in the setting of various infectious diseases, malignancies, inflammatory disorders, autoimmune processes, and even medications. SS has been noted in the setting of a number of malignancies, and it may precede, be concurrent with, or follow the diagnosis of malignancy[1] . Bullous lesions are more frequently associated with malignancy, thus a search for an underlying cause should be undertaken in patients with this type of lesion morphology[2] .

References:

1. Joshi TP, Friske SK, Hsiou DA, Duvic M. New Practical Aspects of Sweet Syndrome. *American journal of clinical dermatology*. 2022;23(3):301-318. doi:10.1007/s40257-022-00673-4
2. James WD, Berger TG, Elston DM. *Andrews' Diseases of the Skin.* 2011; (12):140-142

ACUTE-ONSET VESICULAR ERUPTION IN A PATIENT WITH REFRACTORY "SWEET SYNDROME"

Case No. 17

PRESENTER: Soo Hyun Choi, BA
Ian Watson, MD
Carole Bitar, MD
Erin Boh MD, PhD
New Orleans LA

History:
A 69-year-old female with a history of breast cancer and diabetes who had been followed in our clinic for a 12-year history of neutrophilic dermatosis presented with one month of progressive, pruritic, vesicular eruption to trunk and bilateral lower extremities with associated nausea, beginning acutely 3 days after receiving her 3rd dose of IVIG. Of note, her neutrophilic dermatosis, characterized by purpuric papulonodules overlying multiple joints, was clinically suggestive of Sweet's although histopathology was only intermittently supportive of this diagnosis. She had been refractory to dapsone, and intolerant to trials of colchicine, methotrexate, mycophenolate, azathioprine, and apremilast during this interval. At the time of onset of this secondary, acute eruption, she was on a regimen of dapsone 50mg daily, Plaquenil 200 mg BID, prednisone 20 mg daily, IVIG 1g/kg every month. She denies new contacts, illness, or changes to medication. She has a new cat at home as of 8 months ago. Cancer screening is non-contributory, and breast cancer in remission since 2005 when she had bilateral mastectomy.

Physical Examination:
General: Tremulous
Skin:
-Face: Absent eruption
-Arms: Few, thin, psoriasiform plaques to forearms with violaceous nodules to bilateral elbow, non-blanching, purpuric, linear plaques to bilateral extensor elbow
-Abdomen: Few, thin, psoriasiform plaques
-Back: Scattered, thin, annular and hemi-arcuate, psoriasiform plaques with overlying fine, poorly adherent scale and studded by non-follicular papules at periphery to lower back
-Buttocks: Scattered, thin, annular and hemi-arcuate, psoriasiform plaques with overlying fine, poorly adherent scale and studded by non-follicular papules at periphery
-Legs & thighs: Thin, hemi-arcuate plaques with overlying fine, poorly adherent scale and studded by non-follicular vesicles at periphery, violaceous plaque-nodules to bilateral ankle and heel
*KOH scraping from bilateral lower extremities was without evidence of hyphal elements

Histopathology:

August 2022: Punch biopsy left leg demonstrated subepidermal blister with dense neutrophilic infiltrate and papillary dermal abscesses. Also showed an underlying leukocytoclastic vasculitis with fibrinoid necrosis of the vessel walls. GMS stain was negative for hyphae. DIF findings were compatible with linear IgA.

June 2021: Punch biopsy left hand demonstrating diffuse dermal neutrophilic infiltrate, accompanied by dermal edema. No vasculitis or abscess formation seen. Suggestive of Sweet syndrome.

February 2021: Punch biopsy (1) left arm demonstrating rbc extravasation in the dermis with prominent solar elastosis with superficial perivascular T-lymphocytic infiltrate (CD3+. CD56-) compatible with actinic purpura, (2) left ankle demonstrating vascular proliferation in the superficial dermis in a lobular pattern accompanied by dermal fibrosis, rbc extravasation and hemosiderin laden macrophages with superficial perivascular T-lymphocytic infiltrate (CD3+. CD56-) suggestive of scar with stasis change.

May 2018: Punch biopsy right elbow demonstrating dense neutrophil aggregates in the dermis with foci of leukocytoclasia, leukocytoclastic vasculitis, and prominent phagocytosis of neutrophils suggestive of neutrophilic dermatosis

Laboratory Data:

- TSH wnl, free T4 0.84, anti-TPO non-reactive
- CBC, CMP wnl
- SPEP wnl, ANA neg, H.pylori neg, leukemia panel wnl, G6PD wnl

Clinical Course:

Dapsone was halted and patient was transitioned to apremilast 30mg BID, continuing prednisone 20mg daily and Plaquenil 200mg daily at most recent follow up.

Diagnosis: Linear IgA bullous dermatosis in setting of treatment-refractory neutrophilic dermatosis

Points of Emphasis:

- Immunobullous diseases with neutrophilic infiltration include a differential diagnosis of linear IgA bullous dermatosis (LABD), dermatitis herpetiformis, bullous SLE, bullous pemphigoid, among others. This highlights the importance of DIF in diagnosis.[1] Dapsone is the most commonly used treatment.[2]
- Bullous Sweet's syndrome may also present with plaques with peripheral bullae over trunk and extremities, with histopathology showing subepidermal blister formation with dermal neutrophilic infiltrate. DIF would help differentiate this.[3]
- Reported IVIG-induced adverse cutaneous events include urticaria, spot papules, eczema, pompholyx, lichenoid dermatitis, desquamation, and epidermolysis in severe cases.[4] To our knowledge, incidence of IVIG-induced linear IgA has not been reported.

- Passive transmission of various antibodies from IVIG has been reported.[5,6] It is unclear whether our patient may have anti-BPAG antibodies in her IVIG donor pool, leading to her presentation of linear IgA.

References:

1. Tekin B, Johnson EF, Wieland CN, et al. Histopathology of autoimmune bullous dermatoses: what's new? [published online ahead of print, 2022 Jun 25]. *Hum Pathol*. 2022;128:69-89. doi:10.1016/j.humpath.2022.06.021
2. Shin L, Gardner JT 2nd, Dao H Jr. Updates in the Diagnosis and Management of Linear IgA Disease: A Systematic Review. *Medicina (Kaunas)*. 2021;57(8):818. Published 2021 Aug 12. doi:10.3390/medicina57080818
3. Salman A, Berenjian A, Eser A, et al. Bullous Sweet's Syndrome: Report of an Atypical Case Presenting with Ring-Like, Figurate Lesions. Büllöz Sweet Sendromu: Halka Benzeri, Figüre Lezyonlarla Ortaya Çıkan Atipik Bir Olgu Sunumu. *Turk J Haematol*. 2017;34(1):118-119. doi:10.4274/tjh.2015.0202
4. Guo Y, Tian X, Wang X, Xiao Z. Adverse Effects of Immunoglobulin Therapy. *Front Immunol*. 2018;9:1299. Published 2018 Jun 8. doi:10.3389/fimmu.2018.01299
5. Rushin J, Rumsey DH, Ewing CA, Sandler SG. Detection of multiple passively acquired alloantibodies following infusions of IV Rh immune globulin. *Transfusion*. 2000;40(5):551-554. doi:10.1046/j.1537-2995.2000.40050551.x
6. Uchida Y, Kato D, Adachi K, Toyoda T, Matsukawa N. Passively acquired thyroid autoantibodies from intravenous immunoglobulin in autoimmune encephalitis: Two case reports. *J Neurol Sci*. 2017;383:116-117. doi:10.1016/j.jns.2017.11.002

INTERSTITIAL GRANULOMATOUS DRUG REACTION ASSOCIATED WITH TOCILIZUMAB WITH FEATURES RESEMBLING GRANULOMA ANNULARE

Case No. 18

Presenters: Kevin Pennycook, DO
Aditya Sood, MS4
Heather Allen, PA-C
Dipti Anand, MD
Kristopher McKay, MD
Atlanta, GA

History: A 63 year old female with history of rheumatoid arthritis and lupus erythematosus presents with a "bumpy" rash on back of thighs and lateral chest, upper arms and shoulders. She reports no associated itch, however notes transient mild burning of rash. Previous biopsy of the rash was consistent with resolving granuloma annulare. Previous treatment trial with intralesional triamcinolone and fluocinonide cream showed no notable improvement. The patient is being managed with subcutaneous Tocilizumab since, 2019.

Physical Exam:
Physical exam revealed diffuse infiltrative papules coalescing into ill-defined erythematous plaques distributed on the upper arms, posterior shoulders, lateral chest and posterior thighs. Punch biopsy of lesion on right mid back was performed.

Histopathology:
Histology showed a superficial and deep interstitial granulomatous infiltrate. In some areas, subtle interstitial histiocytes enwrapped slightly swollen and eosinophilic collagen bundles in a pattern reminiscent of ill-formed lesions of granuloma annulare. There was also a mixed inflammatory infiltrate containing lymphocytes, plasma cells and occasional mast cells in a perivascular, superficial and deep distribution. There was very little if any evidence of true vacuolar interface alteration. Substantial numbers of eosinophils were not seen. No true areas of true mucinous collagen degeneration were seen. Alcian blue stain did not reveal any positivity in the mid to deep dermis. The plasma cells and mast cells were highlighted by CD138 and CD117 studies, respectively. CD163 highlighted the subtle interstitial histiocytes in the described distribution. No alteration in CD34+ dermal fibroblasts distribution was present. VVG stain demonstrated a normal component and morphology of dermal elastic fibers.

This histology was compatible with interstitial granulomatous drug reaction, with a pattern resembling ill-formed granuloma annulare.

Clinical Course: Patient is awaiting follow-up with Rheumatology.

Diagnosis: Interstitial granulomatous drug reaction (IGDR) with overlapping features of polycyclic (granuloma annulare-like) granulomatous dermatitis.

Points of Emphasis:

Granuloma annulare, a self-limiting disorder presenting classically in its localized form as erythematous annular plaque without scale has been associated with a variety of agents, including disease-modifying anti-rheumatic drugs (DMARDs), allopurinol, amlodipine, levetiracetam, and paroxetine. Herein, we report a case of an interstitial granulomatous drug reaction mimicking the histologic features of granuloma annulare.

Clinically, this patient presents as IGDR; however, the histology shows granuloma annulare-like pattern. This emphasizes the overlapping clinical and histopathologic features seen in the reactive granulomatous dermatidides (IGDR, interstitial granulomatous dermatitis, polycyclic/granuloma annulare-like granulomatous dermatitis, and palisaded neutrophilic and granulomatous dermatitis).

In our patient's biopsy, features of granuloma annulare can be visualized throughout the deep dermis and extending into the subcutis. While this biopsy resembles granuloma annulare, there are findings which are unusual for the entity, including plasma cells and a complete absence of interstitial true mucinous collagen degeneration. Findings like these have been described in granuloma annulare-like variants of interstitial granulomatous drug reaction. It is also noteworthy that the clinical morphology and distribution noted in the clinical images is typical of interstitial granulomatous drug reaction. It is of course impossible to say with certainty which drug led to this reaction, but there is a case report of a reaction to tocilizumab which demonstrated very similar if not identical histopathologic features to these, and in the majority of reported cases of reactions to that medication at least some granulomatous component to the infiltrate is described.

It is paradoxical that this medication (which is effective in treating interstitial granulomatous dermatitis associated with systemic disease such as rheumatoid arthritis) seems to have a tendency to cause granulomatous drug reactions. Interstitial granulomatous drug reactions have also been described due to a variety of other agents including antihypertensive and cholesterol lowering medications, but those cases usually feature at least some interface alteration along with more eosinophils that are present in this biopsy. Unusual granuloma annulare would still be in the histopathologic differential diagnosis, but the absence of mucin in this deep biopsy and the presence of plasma cells would be two very unusual features.

References:

Altemir A, Iglesias-Sancho M, Sola-Casas M de LÁ, Novoa-Lamazares L, Fernández-Figueras M, Salleras-Redonnet M. Interstitial granulomatous dermatitis following tocilizumab, a paradoxical reaction? *Dermatol Ther*. 2020;33(6):e14207. doi:10.1111/dth.14207

Pelechas E, Papoudou-Bai A, Voulgari P, Drosos A. Granuloma annulare development in a patient with rheumatoid arthritis treated with tocilizumab: case-based review. Rheumatology International. 2019;39. doi:10.1007/s00296-018-4212-0

Katsuda K, Arase N, Nakagawa Y, Tanemura A, Fujimoto M. Case of granuloma annulare after using tocilizumab. J Dermatol. 2020;47(4):e117-e119. doi:10.1111/1346-8138.15252

PITYRIASIS RUBRA PILARIS

Case No. 19 **Presenters:** Haley Caire, MD
Rachel Parks, BS
Christopher Burkenstock, MD
New Orleans, LA

History: A 67-year-old male with a past medical history of hypertension, hyperlipidemia, hyperthyroidism (previously treated with methimazole), and duodenal cancer (s/p Whipple procedure, chemotherapy and radiation therapy) presents for evaluation of a several month history of a rash involving his whole body. The rash initially began as red bumps that he noticed along his beard line after shaving, which progressed to involve his trunk and extremities, with involvement of the hands and feet. He reports that the rash is occasionally itchy but denies any associated pain. The patient was previously treated with a topical antifungal and topical corticosteroid without improvement. He denies any recent infections, changes in medications, or new medical diagnoses.

Physical Examination: The patient is a well-appearing Fitzpatrick type V male. There is a spiny, perifollicular prominence involving the entire back. The extremities exhibit erythematous, shiny, scaling papules coalescing into plaques with uninvolved interrupting skin. The dorsal hands appear xerotic and hyperkeratotic, while the palms and soles have a waxy keratoderma appearance.

Histopathology:

1. <u>Skin, back, punch biopsy</u>: Psoriasiform dermatitis with superficial perivascular and perifollicular lymphocytic infiltrate. At the center of the biopsy, there is a distended follicle filled with keratinous material and focal histiocytic reaction at the periphery.
2. <u>Skin, right lower leg, punch biopsy</u>: Psoriasiform dermatitis associated with a dilated follicular infundibulum filled with keratinous material and focal parakeratosis. The dermis exhibits superficial perivascular lymphohistiocytic infiltrate.

Clinical Course: Two punch biopsies were performed at the patient's initial clinic visit. Both biopsies, in addition to the physical exam findings, were consistent with pityriasis rubra pilaris. The patient was started on a one month prednisone taper. Lab work was completed, and the patient was subsequently started on Acitretin 25mg daily. In addition, he has been followed closely by his primary care physician to complete the age appropriate screenings. Labs revealed an iron deficiency anemia and elevated prostatic specific antigen of 22.77, which are both currently being further evaluated for potential malignancy.

Diagnosis: Pityriasis rubra pilaris (PRP)

Points of Emphasis:

PRP is a rare, idiopathic, papulosquamous inflammatory disease that is associated with characteristic physical exam and pathological findings. While there are cases of inherited PRP, the majority of cases are triggered by infection, UV exposure, medication, or various minor traumas to the skin. Autoimmune disease, HIV infection, and internal malignancies also may play a role in the development of PRP, but in many cases the cause is unable to be identified. The physical exam will reveal follicular hyperkeratosis and rough papules on an erythematous base, which often coalesce into orange-red plaques with "islands of sparing". The keratotic follicular papules are said to have a nutmeg grater appearance. The palms and soles are classically involved with a waxy keratoderma appearance, and there may be associated nail findings.[1]

Diagnosis of PRP is supported by pathologic examination. Biopsy will reveal psoriasiform dermatitis with alternating orthokeratosis and parakeratosis. Hair follicles may be dilated, filled with keratinous material, and surrounded by parakeratosis. Lymphohistiocytic perivascular infiltrate is seen in the dermis. These definitive findings assist in differentiating PRP from a variety of mimicking conditions, such as psoriasis, seborrheic dermatitis, Wong type dermatomyositis, and cutaneous T-cell lymphoma.[1]

The treatment for PRP involves topical and systemic therapies. Localized PRP can be managed with topical corticosteroids or topical retinoids. More severe forms of PRP should be treated additionally with systemic therapies.[2] First line systemic therapy includes systemic retinoids, followed by methotrexate. Therapy escalation to biologics can be considered after 12 weeks of treatment failure.[3]

We present this case of PRP to discuss the classic physical exam findings in skin of color and the histopathologic features of this rare disorder. While hyperkeratotic follicular papules have a consistent appearance regardless of skin type, the typical "salmon" colored eruption may present differently in skin of color. These patients are more likely to exhibit variants of eczematous eruptions, which can contribute to diagnosis difficulty and delay in an already rare disease.[4] This case also is noteworthy due to the association with a potential underlying malignancy. While rare, cases have been published describing PRP in association with prostate cancer, as a paraneoplastic dermatosis.[5] In such cases, it is important that dermatologists are aware of the characteristic pathologic findings, in addition to the different clinical presentations that can manifest in skin of color, to reduce misdiagnoses and improve outcomes for patients.

References:

1. Bolognia, J. L., Schaffer, J. V., & Cerroni, L. (2015). Other Papulosquamous Disorders. In Dermatology (fourth edition, pp.166-170). Text, Elsevier.
2. Kamarachev J, Grozdev I, Darlenski R, Tsankov N. Pityriasis rubra pilaris as a systemic disease. *Clin Dermatol*. 2019;37(6):657-662.
3. Roenneberg S, Biedermann T. Pityriasis rubra pilaris: algorithms for diagnosis and treatment. *J Eur Acad Dermatol Venereol*. 2018;32(6):889-898.

4. Plante JG, Aleisa AI, Thiers BH. Pityriasis rubra pilaris in skin of color [published correction appears in Int J Womens Dermatol. 2021 Sep 28;7(5Part B):868]. *Int J Womens Dermatol*. 2021;7(2):207-208.
5. Fekete, G. L., Boda, D., Căruntu, C., & Fekete, L. (2019). Paraneoplastic pityriasis rubra pilaris in association with prostate carcinoma: A case report and literature review. Experimental and therapeutic medicine, 18(6), 5052–5055. https://doi.org/10.3892/etm.2019.8169

LICHEN PLANUS PIGMENTOSUS

Case No. 20 **PRESENTER:** Andrew Joselow, MD
New Orleans, LA

History: The patient is a 61 year old Pakistani female with a past medical history of seborrheic dermatitis, female pattern hair loss, and positive ANA who presented with a new flaring rash of the dorsal hands. In 2012, the patient had a biopsy of the chin and temple which revealed a "senescent lichenoid reaction with clustered colloid bodies and melanoderma," possibly suggestive of erythema dyschromicum perstans. At that time, she was started on hydroxychloroquine which she took for 1 year.

Physical Examination: lichenoid photosensitive eruption on the dorsal hands

Differential diagnosis: erythema dyschromicum perstans vs. subacute cutaneous lupus erythematosus vs. pigmented purpuric dermatitis vs. lichen planus vs. dermatomyositis vs. other

Laboratory Data:
11/2021: CBC wnl, CMP with AST 50, ALT 55. CK wnl. Aldolase wnl. ENA negative.
1/2021: HbA1c 6.7, eGFR 81
9/2019: ANA 1:320 speckled; ENA normal, RF negative, dsDNA normal, TSH normal
1/2014: ANA 1:160 speckled
9/2012: ANA 1:80 speckled

Histopathology: Mild hyperkeratosis and a lichenoid lymphocytic infiltrate accompanied by prominent melanin incontinence and basal vacuolar change. Granulomas and purpura are also noted in superficial dermis. Iron stain is negative for iron deposition in the dermis. Findings could be seen in lichenoid drug eruption, which is favored, and lichen planus pigmentosus.

Final Diagnosis: Lichenoid dermatitis

Clinical Course: The patient reported that she had not started any new medications in the past 4-5 years, making lichen planus pigmentosus more likely than lichenoid drug eruption. She was started on Plaquenil 200mg BID and counseled on the importance of sun protection. After 2 months on Plaquenil and increased sun protection, the patient's rash improved on her face, affecting only her dorsal hands.

Diagnosis: Lichen Planus Pigmentosus

Points of Emphasis: Although lichen planus pigmentosus most commonly affects the face and neck, we present a case with dorsal hand involvement. Erythema dyschromicum perstans (EDP) is considered the principal differential diagnosis of lichen planus pigmentosus (LPP). Clinically LPP typically presents as discrete, confluent brown macules on sun-exposed areas with frequent pruritis whereas EDP presents as ash colored polycyclic macules not limited to sun-exposed areas with infrequent pruritis. Both LPP and EDP present similarly histopathologically as an interface dermatitis with an inflammatory infiltrate that obscures the dermo-epidermal junction and pigment incontinence. However, in LPP lichenoid features are prominent throughout the lesion with melanin deposition in the superficial dermis whereas in EDP, lichenoid features are primarily within the periphery of the lesion and sparse in its center with melanin deposition in the deeper dermis.

References:

1. Ghosh A, Coondoo A. Lichen Planus Pigmentosus: The Controversial Consensus. Indian J Dermatol. 2016 Sep-Oct;61(5):482-6. doi: 10.4103/0019-5154.190108. PMID: 27688435; PMCID: PMC5029231.

2. Robles-Méndez, J.C., Rizo-Frías, P., Herz-Ruelas, M.E., Pandya, A.G. and Ocampo Candiani, J. (2018), Lichen planus pigmentosus and its variants: review and update. Int J Dermatol, 57: 505-514. https://doi.org/10.1111/ijd.13806

LICHEN PLANUS PEMPHIGOIDES

Case No. 21

PRESENTER: Jason Dominguez, PA
Robert Chappell, MD
Carlos Ricotti, MD
Odessa, TX
Miami, FL

History: A 67-year-old female presented for discoloration with occasional blisters on her lower back, bilateral axilla, and bilateral lower extremities for several months.

Physical Examination: Multiple well-demarcated grey-brown plaques with occasional hemorrhagic bulla located within these lesions involving the lower back, bilateral axilla, and bilateral upper thighs.

Laboratory Data: N/A

Histopathology: There was a lichenoid infiltrate with focal vacuolar alteration and a subepidermal blister. Direct immunofluorescence studies revealed linear binding of IgG and C3 as well as diffuse granular deposition of fibrinogen.

Clinical Course: Initially the lesions begin as plaques with the longer standing lesions eventually developing the bullae. She is currently well controlled on clobetasol cream two times a day on active lesions.

Diagnosis: Lichen Planus Pemphigoides

Points of Emphasis:

1. Lichen Planus Pemphigoides (LPP) is differentiated from bullous Lichen Planus by the presence of autoantibodies in the lesions of LPP.
2. LPP falls under the umbrella of diseases characterized by auto-antibodies against type XVII collagen, with subtle differences in the epitope specificity of autoantibodies in sera of patients with LPP, BP, and MMP.
3. It is theorized traditional Lichen Planus is protected from becoming a blistering disorder by its Th1 response (vs Th2 seen in bullous pemphigoid), but a dysregulation causing a Th2 response to NC16A may induce the development of LPP
4. Further study in this area is needed to bring insight to the pathophysiology of LPP as well as other blistering disorders, and possibly new treatment options of LPP and other refractory blistering disorders.

References:

1. Hübner F, Langan EA, Recke A. Lichen Planus Pemphigoides: From Lichenoid Inflammation to Autoantibody-Mediated Blistering. Front Immunol. 2019 Jul 2;10:1389. doi: 10.3389/fimmu.2019.01389. PMID: 31312198; PMCID: PMC6614382.
2. Kromminga A, Sitaru C, Meyer J, Arndt R, Schmidt E, Christophers E, Bröcker EB, Zillikens D. Cicatricial pemphigoid differs from bullous pemphigoid and pemphigoid gestationis regarding the fine specificity of autoantibodies to the BP180 NC16A domain. J Dermatol Sci. 2002 Jan;28(1):68-75. doi: 10.1016/s0923-1811(01)00144-x. PMID: 11916132.

DARIER DISEASE

Case No. 22

PRESENTER: Madeleine DeGrange, MS4
George Jeha, MD
Christopher Burkenstock, MD
New Orleans, LA

History:
81 y.o. male with no significant past dermatologic history presenting for itchy rash on chest, elbow, back, knees, and ankle for 3 months. Initially, rash started on the chest and spread to involve the aforementioned areas. He has tried desonide cream and calcipotriene cream without relief. He has not recently traveled, started new medications, new soaps or detergents, or altered his life in any other way that he can recall. He has no known drug allergies. He is the only one in his household with this eruption. He also has some "dandruff" that he would like addressed on his forehead.

Physical Examination:
Gen: No acute distress. Well-developed, well-nourished.
Neuro: Normocephalic, atraumatic. Alert and oriented x 3.
Skin: Fitzpatrick Type II
- Eczematous appearing eruption with discrete macules and papules on background erythema involving most prominently the central chest; to a lesser extent involves the left knee, left elbow; the back is largely clear
- Spares the palms, soles, groin, and intertriginous area
- No nail changes
- Mild scale to eyebrows, scalp

Laboratory Data:
NA

Histopathology:
Central chest punch biopsy (3 x 2 mm) – Supra-basilar acantholytic dermatosis with Darier-type dyskeratosis. Mild superficial perivascular lymphocytic infiltrate with occasional eosinophils present.

Clinical Course:
At the initial visit, 8/31/22, patient was diagnosed with an unspecified dermatitis with a differential diagnosis including Grover disease, Darier disease, psoriasis, and seborrheic dermatitis. A punch biopsy of the central chest was obtained. In the interim, patient was started on clobetasol 0.05% cream, calcipotriene 0.005% cream, and pramoxine as needed for pruritis. Based on the results of the histopathology, on 9/6/22, it was concluded that Darier disease was the cause of the dermatitis.

Patient returned for follow-up on 9/14/22 where he complained the pruritic rash spread to different extremities now presenting on the back. Clobetasol provided temporary relief. He notes that his sons have similar episodes of itchy skin but no other family members. At this visit, patient was started on acitretin 25 mg with Eucerin and ammonium lactate lotion as daily moisturizers. He was instructed to continue the clobetasol, calcipotriene, and pramoxine as previously directed in addition to daily SPF prior to leaving the house. CBC, CMP, and fasting lipid panel were obtained for drug monitoring. All lab values were within normal limits besides an elevated BUN/Cr at baseline.

Diagnosis:
Darier disease

Points of Emphasis:
Darier disease is a rare autosomal dominant disease characterized by multiple discrete scaling, crusting, and pruritic papules to confluent plaques in the seborrheic and flexural areas. Lesions may be skin-colored or red-brown with hyperkeratosis, yellow crusting, and/or greasy, warty, or rough texture.

Darier disease is caused by loss-of-function mutations in the *ATP2A2* gene that ultimately result in impaired calcium homeostasis of the skin. The *ATP2A2* gene encodes sarco/endoplasmic reticulum calcium adenosine triphosphatase (ATP)ase pump type 2 isoform (SERCA2). SERCA2 actively transports calcium ions from the cytosol into the lumen of the endoplasmic reticulum to maintain a low cytoplasmic calcium level. Its dysfunction results in impaired calcium transport. SERCA2 is highly expressed in keratinocytes and responsible for maintaining calcium stores within these cells. With calcium signaling involved in regulating cell-to-cell adhesion and differentiation of the epidermis, deficiency in SERCA2 has been linked to the loss of cell-to-cell adhesion (acantholysis) and abnormal keratinization characteristic of Darier disease.

This disease is inherited in an autosomal dominant pattern with complete penetrance and variable expressivity resulting in significant differences in clinical manifestations among family members. It affects all ethnic groups and sexes equally with onset usually in the first or second decade of life. After onset, disease has chronic course with frequent exacerbations. Exacerbating factors include bacterial infections, mechanical trauma, heat, perspiration, and ultraviolet light making the disease more prominent in the spring and summer months. Certain medications such as lithium, calcium channel blockers, and interferon beta-1a may additionally exacerbate the disease and should be avoided.

Other sites of involvement include the palms, soles, scalp, nails, mucosa, and eyes. Palms and soles may present with multiple, flat cobblestone-like papules. Scalp involvement and scarring may lead to alopecia. Nails may thin and split distally to create a characteristic V-shaped scalloping. This is often accompanied by parallel white or red bands of the nail bed to create “candy-cane nails.” Mucous membranes may develop white, centrally depressed papules resembling cobblestone lesions. Patients may also experience increased blepharitis and dry eye.

Bacterial and fungal infections are common complications of Darier disease leading to malodor of the skin. Rarely, widespread herpes simplex virus and smallpox virus infections of lesions can occur. Because lesions may be disfiguring, pruritic, painful, or malodorous, disease may lead to significant psychosocial distress.

Skin biopsy is required to confirm the diagnosis of Darier disease. Acantholysis and dyskeratosis are the defining histologic features of the disease. Suprabasal acantholysis forms lacunar clefts. Two types of dyskeratotic cells are characteristic in Darier disease: in the stratum spinosum/granulosum (“corps ronds”) and in the stratum corneum (“corp grains”). Other common features include hyperkeratosis, parakeratosis, and villi-like projections of the papillary dermis covered by a single layer of stratum basale.

Darier disease is very rare disorder. This patient’s presentation for the disease was unique in the following ways: older age of onset, atypical distribution involving extremities, and the lack of nail or other characteristic sites of involvement. While the clinical presentation and histopathologic findings of supra-basilar acantholysis and dyskeratosis favor Darier disease, Grover disease masquerading as Darier disease remains a possibility. It cannot be overlooked that the patient's age of 81 is very atypical for the onset of Darier disease. However, Grover disease occurs in adults over 50 and is more common in males. The principal histopathologic findings in Grover disease are variable focal acantholysis and dyskeratosis. Systemic retinoids such as isotretinoin or acitretin have been the most effective in treating Darier disease. Patient will be followed closely for relief of symptoms on acitretin and monitoring for bacterial infection of lesions.

References:

1. Darier disease—UpToDate. (n.d.). Retrieved September 20, 2022, from https://www.uptodate.com/contents/darier-disease?search=darier%20disease&source=search_result&selectedTitle=1~39&usage_type=default&display_rank=1
2. Wolff, K., Johnson, R. A., Saavedra, A. P., & Roh, E. K. (2017). Fitzpatrick's Color Atlas and Synopsis of Clinical Dermatology, 8th Edition (8th ed.). McGraw-Hill Education.
3. VisualDx—Darier disease. (n.d.). VisualDx. Retrieved September 21, 2022, from https://www.visualdx.com/visualdx/diagnosis/darier+disease?diagnosisId=51358&moduleId=101
4. Savignac, M., Edir, A., Simon, M., & Hovnanian, A. (2011). Darier disease: A disease model of impaired calcium homeostasis in the skin. Biochimica et Biophysica Acta (BBA) - Molecular Cell Research, 1813(5), 1111–1117. https://doi.org/10.1016/j.bbamcr.2010.12.006
5. Hammad, H., Adler, E., Yeshurun, A., Abayev, L., Vered, S., Briscoe, D., Ziv, M., & Dodiuk-Gad, R. P. (2021). Ophthalmic Assessment in Patients With Darier Disease. *American Journal of Ophthalmology*, 227, 139–142. https://doi.org/10.1016/j.ajo.2021.03.011

SPONGIOTIC DERMATITIS WITH EOSINOPHILS

Case No. 23

PRESENTER: Alexandra Streifel, MD
New Orleans, LA
G. William Poche, MD
Baton Rouge, LA

History:
DB is a 63 year old male with PMH of HTN, HLD, and T2DM who presented to dermatology clinic for a several year history of pruritic, raised plaques on trunk and extremities. Eruption initially began as a pruritic plaque on right lower leg, which was treated by outside dermatologist as lichen simplex chronicus. The pruritic plaques then spread to involve bilateral legs, arms, and back. He denies any known inciting factors, such as new medications, personal hygiene products, or new chemical exposures. Patient states that he “does not go outside much” so unsure if photo exacerbation. He has since been treated with topical steroids, intralesional Kenalog, and Prednisone, with improvement noted only with systemic steroids. Due to recalcitrant disease, punch biopsy was obtained from both a newer and a well-developed lesion from right and left arm, respectively.

Physical Examination:
Well demarcated, hyperkeratotic, erythematous to violaceous plaques with scale to bilateral dorsal arms
Well demarcated, hyperkeratotic, scaly, erythematous papules and plaques to lower back
Well demarcated, hyperkeratotic, scaly, erythematous plaques with hyperpigmented macules to upper thighs and lower leg
Well demarcated, scaly, erythematous plaque to right anterior lower leg

Laboratory Data:
CBC within normal limits, with notable normal white blood cell count and normal % eosinophils. CMP notable for elevated glucose at 170 mg/dL, elevated creatinine at 1.52 mg/dL. Negative QuantiFERON gold, hepatitis panel, HIV

Histopathology:
The epidermis contains multifocal spongiosis and focal parakeratosis. PAS stains were negative. The superficial dermis has a perivascular lymphocytic infiltrate with eosinophils. The biopsy findings are those of spongiotic dermatitis with eosinophils, and the differential would include contact dermatitis, nummular dermatitis, drug eruption, atopic dermatitis, arthropod bite response, and prodromal pemphigus/pemphigoid.

Clinical Course:
Due to concern for drug eruption, patient’s atenolol was discontinued after coordinating care with his primary care provider. The pruritic eruption persisted despite discontinuation of beta blocker. This patient was most recently started on dupixent for his dermatitis.

Diagnosis:
SPONGIOTIC DERMATITIS WITH EOSINOPHILS – photoallergic drug eruption vs atopic dermatitis vs nummular dermatitis vs other

Points of Emphasis:
Here we present a case of recalcitrant dermatitis in sun exposed areas with nonspecific pathology findings. On exam, this patient demonstrated both psoriasiform as well as eczematous lesions. Unfortunately, he has continued to experience persistence of lesions and significant pruritus despite topical and intralesional therapy.

The differential diagnosis of spongiotic dermatitis with eosinophils is broad and encompasses many of the aforementioned potential etiologies, such as drug eruption, atopic dermatitis, or contact dermatitis. In this perplexing clinical case, there is no clear contact allergen leading to a chronic contact dermatitis. Given the distribution of findings, photoallergic is a possible etiology worth exploring further.[1]

Photoallergic drug eruptions occur as a result of contact with a photosensitizer, which converts photons to chromophores. This chromophore then binds to a protein in the dermis, forming an antigen through a process known as haptenization.[2] This leads to the Type IV hypersensitivity reaction that characterizes photoallergic drug eruptions. True photoallergic drug eruptions are exceedingly rare, with a single case reported from the years 1970 to 2000 at the Dundee Photobiology Unit.[2] Photoallergic drug eruptions often present with eczematous skin findings which typically do not manifest until 24-72 hours post exposure. Photoallergic eruptions due to systemic agents is quite rare, yet Hofmann and Weber note that a patient who is sensitized to a topical allergen could potentially develop a widespread contact dermatitis following systemic contact to this allergen.[2]

There are a number of known photosensitizing drugs, with hydrochlorothiazide, furosemide, amiodarone, ARBs, ACEis, naproxen, methotrexate, fluoroquinolone, tetracyclines, and some members of the beta-blocker class being known causes of phototoxic eruptions and less commonly photoallergic reactions.[2] In this particular patient case, atenolol was discontinued due to concern for this being the possible etiologic agent of his chronic rash. His pruritic eruption persisted despite cessation of atenolol. This patient does remain on a valsartan-hydrochlorothiazide combination antihypertensive which could be a potential causative agent of his ongoing dermatitis.

While atopic dermatitis or a chronic contact dermatitis are more likely causes of this patient’s eruption a photoallergic dermatitis should not be overlooked. This case illustrates the importance of careful medication review and the potential utility of photo-patch testing, where available, to further elucidate non-specific spongiotic eosinophilic dermatoses such as in this case.

References:
1. Weyers W, Metze D. Histopathology of drug eruptions - general criteria, common patterns, and differential diagnosis. Dermatol Pract Concept. 2011 Jan 31;1(1):33-47. doi: 10.5826/dpc.0101a09. PMID: 24396718; PMCID: PMC3881081.
2. Hofmann GA, Weber B. Drug-induced photosensitivity: culprit drugs, potential mechanisms and clinical consequences. J Dtsch Dermatol Ges. 2021 Jan;19(1):19-29. doi: 10.1111/ddg.14314. PMID: 33491908; PMCID: PMC7898394.

NEUTROPHILIC ECCRINE HIDRADENITIS IN A PEDIATRIC PATIENT WITH ACUTE MYELOID LEUKEMIA TREATED WITH CYTARABINE AND DAUNORUBICIN

Case No. 24 **PRESENTER:** Michelle Toker, BS
Haley Heibel, MD
Bijal Amin, MD
Benedict Wu, DO, PhD
Bronx, New York

History:
A 9-year-old White female with no past medical history presented to the emergency department with a 7-day history of fever, cough, gingival hyperplasia and bleeding, and bruising on her back, dorsal hands, and left foot. She was diagnosed with acute myeloid leukemia (AML) complicated by tumor lysis syndrome. She underwent induction chemotherapy with cytarabine every 12 hours and daunorubicin on days 1, 3, and 5 of treatment. On her 11th day of chemotherapy, she developed a widespread, painful rash.

Physical Examination:
Physical examination revealed tender, indurated, erythematous smooth papules and plaques on the upper back that subsequently spread to the bilateral upper extremities, lower extremities, and trunk. A day later, the patient's lesions progressed to become more widespread with significant edema. Some lesions had central clearing. There was no ulceration or bleeding.

Laboratory Data:

Laboratory Name	**On Admission (two days before initiation of chemotherapy)**	**Reference Value**
White Blood Cell (WBC) count	**392.2 x 10^3/uL**	(4.5 - 13.5 x 10^3/uL)
Platelets	**19 x10^3/uL**	(150 - 450 x10^3/uL)
Hemoglobin	**5.8 g/dL**	(10.0 - 12.0 g/dL)
Hematocrit	**18.7 %**	(35.0 - 40.0 %)
Absolute Neutrophil Count (ANC)	7.8 x 10^3/uL	(1.5 - 8.0 x 10^3/uL)
Absolute Lymphocyte Count (ALC)	**27.5 x 10^3/uL**	(1.5 - 6.0 x 10^3/uL)
Absolute Monocyte Count	**102.0 x 10^3/uL**	(0.0 - 3.5 x 10^3/uL)
Lactate Dehydrogenase (LDH)	**939 U/L**	(<260 U/L)
Uric acid	**10.2 mg/dL**	(2.5 - 5.5 mg/dL)
Sodium	137 mEq/L	(135 - 145 mEq/L)
Potassium	**3.2 mEq/L**	(3.5 - 5.0 mEq/L)
Chloride	99 mEq/L	(98 - 108 mEq/L)
CO_2	26 mEq/L	(20 - 30 mEq/L)
Glucose	99 mg/dL	(70 - 140 mg/dL)
Blood urea nitrogen (BUN)	13 mg/dL	(5 - 20 mg/dL)
Creatinine	**0.80 mg/dL**	(<0.60 mg/dL)
Calcium	**8.4 mg/dL**	(8.5 - 10.5 mg/dL)
Phosphate	3.6 mg/dL	(3.5 - 6.0 mg/dL)
Albumin	**3.1 g/dL**	(3.5 - 5.0 g/dL)

Histopathology:
Punch biopsy of the right flank revealed a dermal eccrinocentric inflammatory cell infiltrate containing neutrophils and eosinophils.

Figure 2. (A) Histology slide (20x) from skin biopsy demonstrates mixed inflammatory cell infiltrate including many neutrophils concentrated around eccrine glands in the dermis. (B) Histology slide (60x) demonstrating neutrophils around and within the eccrine epithelium, with no visible blasts.

Clinical Course:
Five days after initial inpatient encounter, the patient was started on a 5-day course of prednisone (0.5 mg/kg/day). Within 24 hours of steroid initiation, the patient's fever defervesced; and after two days of steroids, her lesions became significantly less erythematous, edematous, and painful. On day five of prednisone, she was started on a 25% dose reduction taper per week. Ultimately, the patient completed four weeks of prednisone with complete resolution of the eruption. Interestingly, she received cytarabine several weeks later with no recurrence.

Diagnosis:
Neutrophilic ecccrine hidradenitis (NEH) secondary to cytarabine and/or AML.

Points of Emphasis:
We report the first pediatric case of neutrophilic eccrine hidradenitis (NEH) following cytarabine and daunorubicin exposure. AML in the pediatric population is rare, accounting for 15% of childhood leukemias with an incidence of 500 new cases per year in the United States.[1] NEH is an uncommon inflammatory dermatological condition that has been described in patients with AML exposed to certain chemotherapeutic agents, most commonly with the combination of cytarabine and an anthracycline.[2] While there have been reported NEH cases in healthy children, typically presenting as a benign, self-limited palmoplantar condition, there is a scarcity of reported NEH cases in children with cancer.[3]

NEH has a wide spectrum of clinical manifestations, ranging from erythematous papules and plaques to purpuric, pustules, and nodular lesions. The cutaneous findings may be accompanied by fever and neutropenia. This non-specific presentation in a patient with AML could be mistaken for several other dermatologic conditions. For instance, leukemia cutis, the most common skin finding in AML patients, may present similarly to NEH with papules, patches, plaques, or nodules. Additionally, chemotherapy-induced neutropenia may result in disseminated skin and soft tissue infections. Therefore, the diagnosis of NEH may be easily overlooked without histopathologic evidence. What differentiates NEH from other neutrophilic dermatoses is the presence of a neutrophil predominant infiltrate with injury to the eccrine coils resulting in necrosis of the eccrine epithelium.[2]

There are currently no established treatment guidelines for NEH. However, left untreated, NEH lesions can evolve into bullous or ulcerative lesions, which can serve as nidi for infections, especially in immunocompromised patients.[5] Therefore, corticosteroids, which are rarely indicated for NEH, may play an essential role in preventing severe complications in high-risk oncology patients. Yet, because prolonged corticosteroid administration has been associated with an increased risk of sepsis in patients with AML,[4] judicious use is advised. This case highlights a pediatric patient with AML and an eruption consistent with NEH, who had remarkable success with steroid therapy. We demonstrate the need to broaden the differential diagnosis in pediatric

AML patients presenting with rapidly progressive cutaneous findings consisting of smooth papules and plaques. Future studies are warranted to better assess the risks and benefits of systemic corticosteroids for NEH treatment in patients with hematological malignancy.

References:

1. Gamis AS, Alonzo TA, Perentesis JP, Meshinchi S; COG Acute Myeloid Leukemia Committee. Children's Oncology Group's 2013 blueprint for research: Acute myeloid leukemia. *Pediatric Blood & Cancer*. 2013;60(6):964-971. doi:https://doi.org/10.1002/pbc.24432
2. Bachmeyer C, Aractingi S. Neutrophilic eccrine hidradenitis. *Clin Dermatol*. May-Jun 2000;18(3):319-30. doi:10.1016/s0738-081x(99)00123-6
3. Shih IH, Huang YH, Yang CH, Yang LC, Hong HS. Childhood neutrophilic eccrine hidradenitis: a clinicopathologic and immunohistochemical study of 10 patients. *J Am Acad Dermatol*. Jun 2005;52(6):963-6. doi:10.1016/j.jaad.2005.01.009
4. Dix D, Aplenc R, Bowes L, et al. Impact of registration on clinical trials on infection risk in pediatric acute myeloid leukemia. *Int J Cancer*. Apr 1 2016;138(7):1785-91. doi:10.1002/ijc.29905
5. Weiss EH, Ko CJ, Leung TH, et al. Neutrophilic dermatoses: a clinical update. *Current Dermatology Reports*. 2022/06/01 2022;11(2):89-102. doi:10.1007/s13671-022-00355-8

ATROPHODERMA OF PASINI AND PIERINI

Case No. 25 **PRESENTER:** Christopher Wong, DO
Ashleigh Hermann, DO
Michael Carletti, DO
Stephen E. Weis, DO
Clay J. Cockerell, MD, MBA
Ft. Worth, TX
Dallas, TX

History: A twelve-year-old female with no significant medical history presented with a two-month history of a nonpruritic, nonpainful rash on her back initially noticed by her mother. They have not noticed any growth or progression of the rash since they first noticed it. They deny any other areas of involvement.

Physical Examination: A large, irregular, hyperpigmented, shiny depressed plaque with step-off was present on the mid back.

Laboratory Data: *Borrelia burgdorferi* antibody screen was negative.

Histopathology: Punch biopsies of the mid back sent for routine histology demonstrated attenuation of dermal collagen with a focal decrease in the number of fibroblasts. Verhoeff-Van Gieson stain revealed marked diminution of elastic fibers.

Clinical Course: At three-week follow-up status-post skin biopsy, the patient's plaque remained stable and unchanged. No additional lesions were observed. As Lyme disease antibodies were negative, systemic antibiotic therapy was deferred. The lesion is being observed at this time and we plan to follow the patient at three-month intervals for evidence of progression. The case is being presented for recommendations on management regarding follow-up intervals and treatment.

Diagnosis: Atrophoderma of Pasini and Pierini

Points of Emphasis: Atrophoderma of Pasini and Pierini (APP) is a rare idiopathic condition characterized by symmetric hyperpigmented atrophic plaques with "cliff-drop" borders, most commonly on the trunk in young females. Genetic, immunologic, and neurogenic etiologies have been proposed with no definitive contributory factors elicited to date. Some authors consider APP a late-stage atrophic variant of morphea, as both entities exhibit similar histologic findings including sclerosis and collagen homogenization. It has been suggested that APP lacks induration and epidermal atrophy which may distinguish it from morphea. Skin biopsies often confirm the clinical diagnosis. APP has a benign clinical course and has no systemic complications. Topical corticosteroids, topical retinoids, and oral hydroxychloroquine have variable results. Tetracyclines have shown improvement in patients with positive antibodies to *B. burgdorferi*.

References:

1. Begolli Gerqari A, Ferizi M, Gerqari I. Atrophoderma of Pasini and Pierini in a young adult: a case report. *Acta Dermatovenerol Alp Pannonica Adriat*. 2019;28(1):45-46.
2. Hubail R, Karaidi N, Al Awadhi A. Idiopathic Atrophoderma of Pasini and Pierini: A Case Report and Literature Review. *Cureus*. 2022;14(7):e26571. Published 2022 Jul 5. doi:10.7759/cureus.26571

3. Lee Y, Oh Y, Ahn SY, Park HY, Choi EH. A Case of Atrophoderma of Pasini and Pierini Associated with Borrelia burgdorferi Infection Successfully Treated with Oral Doxycycline. *Ann Dermatol*. 2011;23(3):352-356. doi:10.5021/ad.2011.23.3.352
4. Muntyanu A, Redpath M, Roshdy O, Jfri A. Idiopathic Atrophoderma of Pasini and Pierini: Case report and literature review. *Clin Case Rep*. 2018;7(2):258-263. Published 2018 Dec 18. doi:10.1002/ccr3.1958

MID DERMAL ELASTOLYSIS

Case No. 26 **PRESENTER:** Carlos Ricotti, MD
Christopher Logas, DO
Miami, FL

History: 71 year old male presents with skin discoloration on bilateral lower back and flank that started a few months prior to presentation. Patient denies itch, fever, and chills. Currently taking Eliquis, lisinopril, metoprolol, pravastatin, topomax.

Physical Examination: Large faint pink atrophic plaque with surrounding reticulated and annular papules and plaques.

Laboratory Data: N/A

Histopathology: There was evidence of attenuation of the dermis with minimal inflammation. No sclerosis was seen. An elastic tissue stain revealed loss of elastic fibers with fragmentation of some elastic fibers in the mid-reticular dermis.

Clinical Course: Plaques are stable and no longer enlarging. Treatment is in the atrophic areas already affected by the loss of the elastic fibers has been ineffective.

Diagnosis: Mid-dermal elastolysis

Points of Emphasis:
1. Rare, acquired loss of mid-dermal elastic fibers that are predominantly located on the trunk
2. Early diagnosis is key as lesions are difficult to impossible once elastic fibers lost
3. Treatment options include Vitamin E, clofazimine, colchicine, dapsone, topical and systemic steroids, mycophenolate mofetil, vitamin A, soy and rice extracts.

References: (At least two recent pertinent published references)
1. Gambichler T, Mamali K, Scheel C. A Brief Literature Update on Mid-dermal Elastolysis with an Emphasis on Pathogenetic and Therapeutic Aspects. J Clin Aesthet Dermatol. 2020 Sep;13(9):E53-E58. Epub 2020 Sep 1. PMID: 33133343; PMCID: PMC7577333.
2. Gambichler, T. Mid-dermal elastolysis revisited. *Arch Dermatol Res* **302**, 85–93 (2010). https://doi.org/10.1007/s00403-009-1004-0

SHORT BOWEL SYNDROME PRESENTING AS NECROLYTIC ERYTHEMA

Case No. 27 **Presenters:** Yasmin Hadian, DO, MS
Aditya Sood, MS4
Janette Walsh NP-C
Kristopher McKay, MD
Dipti Anand, MD
Atlanta, GA

History: A 66-year-old male with history of partial gastrectomy and small bowel resection presents with a 2 year history of recurring wounds involving his lower extremities. Patient's history is also significant for chronic microcytic anemia requiring blood transfusions. He reports poor diet, consisting of no fruits and infrequent vegetable intake.

Physical Exam:
Physical exam revealed erythematous excoriated erosions with pustules and crusted plaques involving his bilateral lower extremities. He also had bilateral neuropathy of legs. Shave biopsy of right distal pretibial region was performed.

Laboratory Data:
- Hepatitis C Antibody- Negative; HIV1/2 Antibodies- Negative
- Serum zinc level- 62.5 (Normal range 60-120 ug/dl)
- Plasma glucagon- 35 (Normal < 80 pg/ml)
- Open wounds culture showed growth of staphylococcus aureus, enterococcus & serratia.
- X-ray- no evidence of osteomyelitis.

Histopathology:
Histology showed psoriasiform epidermal hyperplasia with confluent parakeratosis and a few dilated vessels. Areas of diminished granular layer were present. Epidermal pallor was subtle, with scattered dyskeratotic cells at all levels of the epidermis. PAS stain was negative for fungal hyphae.

The histology was consistent with psoriasiform necrolytic dermatitis, and additional work-up to exclude glucagonoma syndrome, Hepatitis C/HIV infections, acrodermatitis enteropathica and niacin deficiency was recommended.

Clinical Course: Patient was started on 100 mg of biotin, 40-60 mg zinc, 2.2 grams of isoleucine and 500-1000 mg of niacinamide B3 dailyrecommended to begin zinc supplementation, with dramatic improvement of symptoms, including healing of cutaneous wounds in the resulting weeks.

Diagnosis: Short Bowel Syndrome with acquired nutritional/metabolic deficiency

Points of Emphasis:
Psoriasiform necrolytic dermatoses are a group of cutaneous diseases associated with nutritional or metabolic (amino acid) deficiency. It includes entities like necrolytic migratory erythema, necrolytic acral erythema, acrodermatitis enteropathica, pellagra, and Hartnup disease. They all present with similar histologic reaction pattern of psoriasiform epidermal hyperplasia with mild spongiosis, hypogranulosis, confluent parakeratosis, hyperkeratosis and pallor of the superficial epidermis. Subcorneal or intraepidermal vesiculation may occur from cytolysis of keratinocytes

which show ballooning or reticular change. In late lesions, epidermal pallor is absent, making distinction from psoriasis challenging. Subtle clues like presence of confluent parakeratosis and occasional dyskeratotic keratinocytes, and absence of Munro's microabscesses, can help in distinguishing these diseases from psoriasis.

It is important for dermatopathologists to be aware of these psoriasiform necrolytic dermatoses, and their various clinical associations. Our patient's serology work-up excluded glucagonoma syndrome and necrolytic acral erythema. His marked improvement of symptoms with a daily addition of nutritional and amino acid supplements (biotin, zinc, isoleucine and niacinamide), in conjunction with his clinical history of small bowel resection, is consistent with short bowel syndrome being a potential trigger factor for his cutaneous eruption. Acquired acrodermatitis enteropathica related to decreased zinc levels and deficiency of isoleucine branch-chain amino acid could be a contributing component as well.

References:

- Guliani A, Bishnoi A. Acquired Acrodermatitis Enteropathica. JAMA Dermatology. 2019;155(11):1305. doi:10.1001/jamadermatol.2019.2342
- Jagadeesan S, Kaliyadan F. Acrodermatitis Enteropathica. In: *StatPearls*. StatPearls Publishing; 2022. Accessed September 21, 2022. http://www.ncbi.nlm.nih.gov/books/NBK441835/
- Sanchez JE, Barham KL, Sangueza OP. Acquired acrodermatitis enteropathica: case report of an atypical presentation. J Cutan Pathol. 2007;34(6):490-493. doi:10.1111/j.1600-0560.2006.00640.x
- Sehgal VN, Jain S. Acrodermatitis enteropathica. *Clin Dermatol*. 2000;18(6):745-748. doi:10.1016/s0738-081x(00)00150-4

NECROLYTIC ERYTHEMA

Case No. 28 **PRESENTER:** Rosemary Prejean, MD
Deborah Hilton, MD
Nick Culotta, MD
New Orleans, LA

History: Patient is a 52-year-old female with PMHx of heart failure, chronic kidney disease, and type II diabetes who presented to the hospital with acute on chronic hypoxemic respiratory failure and gram negative sepsis secondary to lower extremity cellulitis, for which meropenem had been given. The patient sustained a cardiac arrest shortly after presentation leading to ventilatory and inotropic support in ICU. On day 5 of hospitalization, the patient began showing signs of skin sloughing to back, lower extremities, and trunk leading to transfer to burn unit. Dermatology was consulted for evaluation for Stevens-Johnson syndrome (SJS).

Physical Examination: Diffusely friable appearance of skin to trunk and all extremities with areas of erosion revealing bright erythema beneath. Pitting edema of distal upper and lower extremities. No mucosal lesions or evidence of any violaceous areas or targetoid (typical or atypical) lesions.

Laboratory Data: CBC was significant for elevated white count with neutrophilic predominance; no eosinophilia present. CMP demonstrated severe acute kidney injury with associated electrolyte abnormalities in addition to mild elevation of AST and alkaline phosphatase. HCV antibody was negative. Zinc level was within normal limits.

Histopathology: Punch biopsy revealed spongiotic dermatitis with superficial epidermal necrosis involving the upper third of the epidermis in addition to dermal edema, lymphangiectasia, and vascular ectasia. Differential histologically included necrolytic migratory erythema, acrodermatitis enteropathica, necrolytic acral erythema, and pellagra. Direct immunofluorescence was negative.

Clinical Course: Meropenem was discontinued; patient was transitioned to ceftazidime instead. Immunosuppressive medications were held out of concern for ongoing systemic infection. Desquamation slowed over the following days. After diligent wound care, erosive lesions began to slowly re-epithelize.

Diagnosis: Drug eruption

Points of emphasis: The differential for dermatopathology consistent with superficial necrolytic erythema includes necrolytic migratory erythema (NME), necrolytic acral erythema (NAE), pellagra, and acrodermatitis enteropathica. In contrast to the subepidermal sloughing and confluent necrosis of full thickness epidermis seen in SJS, histopathology here demonstrates pallor and ballooning of only the upper epidermis. NME describes a rare paraneoplastic dermatologic manifestation frequently associated with glucagonomas, a pancreatic tumor of alpha cells. Pathogenesis is thought to be multifactorial with probable contribution from glucagon excess or deficiencies in zinc, amino acids, or free fatty acids. [1] Importantly, NME can be seen outside of a glucagonoma in patients with liver disease, celiac disease, pancreatitis, or after certain medications (adalimumab, EGFR inhibitors).[2,3] Therefore, lack of an obvious pancreatic tumor does not necessarily rule out NME.

NAE, which more recently has been described a localized (acral) variant of NME, has an association with HCV infection. Rather than only a primary manifestation of this hepatic infection, NAE pathogenesis has proposed connections to downstream effects such as hepatic dysfunction, hypoalbuminemia, zinc deficiency, and hypoglucagonemia. [4]

The common theme that can be seen in these superficial necrolytic erythema disorders is a state of relative nutritional deficiency. Similarly, pellagra is associated with low states of niacin or tryptophan, and acrodermatitis enteropathica is related to zinc deficiency. [5,6] However, our patient did not manifest any of the above proposed etiologies at the time of hospitalization. Given the correlation with initiation and discontinuation of meropenem, it seems her presentation was an uncommon presentation of a cutaneous adverse reaction to the medication.

References:

1. Toberer F, Hartschuh W, Wiedemeyer K. Glucagonoma-associated necrolytic migratory erythema: The broad spectrum of the clinical and histopathological findings and clues to the diagnosis. *Am J Dermatopathol*. 2019;41(3):E29-E32. doi:10.1097/DAD.0000000000001219
2. Ma SH, Li CY. Necrolytic migratory erythema-like eruption associated with erlotinib in a patient with lung adenocarcinoma. *Lung Cancer*. 2020;148:173-174. doi:10.1016/J.LUNGCAN.2020.07.030
3. Lin S, Qiu X, Hong Y, Wang X, Ren J. Necrolytic migratory erythema-like eruption and paradoxical psoriasis associated with adalimumab treatment. *J Dermatol*. 2021;48(11):e572-e573. doi:10.1111/1346-8138.16140
4. Inamadar AC, Shivanna R, Ankad BS. Necrolytic acral erythema: Current insights. *Clin Cosmet Investig Dermatol*. 2020;13:275-281. doi:10.2147/CCID.S189175
5. Xiao H, Jin L, Zhu W, Li F. Chronic diarrhea and pruritic rash related to pellegra after pancreaticoduodenectomy. *Nutr Clin Pract*. 2022;37(1):224-225. doi:10.1002/ncp.10818
6. Guliani A, Bishnoi A. Acquired acrodermatitis enteropathica. *JAMA Dermatology*. 2019;155(11):1305-1305. doi:10.1001/JAMADERMATOL.2019.2342

PEDIATRIC REACTIVE GRANULOMATOUS DERMATITIS

Case No. 29 **PRESENTER:** Sujitha Yadlapati, MD
Thomas Davis, MD
Dallas, TX

History: The patient is a 1-year-old Hispanic female with a 3-month history of slowly enlarging, annular, edematous, pink plaques with a raised border, and no epidermal changes on the lower extremity. The lesions are asymptomatic. A review of systems is unremarkable, and the patient is otherwise healthy. She has not had similar lesions in the past. No relevant past medical history or family history was present. The patient is not on any medication. A 3-mm punch biopsy of the plaque was performed to further evaluate.

Physical Examination: Multiple annular pink edematous, plaques with a raised border. No epidermal changes. Located unilaterally on the distal lower extremity.

Laboratory Data: Pending.

Histopathology: A punch biopsy specimen reveals a superficial and deep perivascular and periadnexal infiltrate composed of histiocytes, lymphocytes, scattered eosinophils, and a few neutrophils. The histiocytes are arranged in a loosely palisaded array around zones of degenerated collagen. There is increased dermal mucin and ropy collagen bundles in a background of basophilic debris.

Clinical Course: The patient was referred to pediatric rheumatology to undergo evaluation for underlying autoimmune disorders such as systemic lupus erythematosus The work up is currently in progress and serologies are pending. Topical steroids and calcineurin inhibitors have been used on the clinical lesions with minimal to no improvement.

Diagnosis: Pediatric reactive granulomatous dermatitis

Points of Emphasis:

Reactive granulomatous dermatitis (RGD) is a reaction pattern that encompasses: interstitial granulomatous dermatitis (IGD), palisaded neutrophilic and granulomatous dermatitis (PNGD), interstitial granulomatous drug reaction (IGDR), and diffuse granulomatous reactions. Pediatric RGD is more commonly reported in female Hispanic patients in the literature. The diagnosis of RGD involves clinicopathologic correlation. Histologically, pediatric cases show variably dense histiocytic infiltrates in the dermis with interstial mucin. A spectrum of histopathology is associated with RGD, including vasculitis and absent mucin in PNGD, mucin and absent vasculitis in IGD, and prominent eosinophils in drug-induced RGD.

Pediatric RGD is commonly associated with underlying autoimmune conditions such as SLE, and patients should be screened promptly. Most pediatric cases reported in the literature are associated with pediatric systemic lupus. Treatment of RGD includes topical steroids, calcineurin inhibitors, hydroxychloroquine, and systemic immunosuppressants. In the presence of an underlying systemic disorder, improvement of the underlying systemic condition can lead to the resolution of cutaneous findings. Recurrence of RGD is consistently linked to decreased control of underlying autoimmune diseases or infections, according to the reported literature.

References:

1. Akinshemoyin Vaughn OL, Siegel DH, Chiu YE, DeBord LC, Hogeling M, Hunt RD, Nguyen C, Sokumbi O, Verbsky JW, Arkin LM. Clinical and histologic presentation of pediatric reactive granulomatous dermatitis. Pediatr Dermatol. 2020 May;37(3):498-503. doi: 10.1111/pde.14137. Epub 2020 Mar 1. PMID: 32115758.
2. Peroni A, Colato C, Schena D, et al. Interstitial granulomatous dermatitis: a distinct clinical entity with characteristic histological and clinical pattern. Br J Dermatol. 2012;66:775-783.

.

CHRONIC GRANULOMATOUS REACTION SECONDARY TO MICROBLADING PIGMENT

Case No. 30

PRESENTER: Saba Suleman, MPH
Maria Villegas, MD
Thomas Davis, MD
Charles S. Stevens, MD
Patricia Castaneda, MD
McAllen, TX
Harlingen, TX
Houston, TX
San Antonio, TX

History:
The patient is a 49-year-old Hispanic female with a history type II diabetes mellitus and hypertension who presented to clinic with a complaint of a pruritic rash over her eyebrows which occurred one month after she had microblading to both brows in Mexico 16 months prior. She stated she had two intralesional steroid injections administered over two months by the same doctor in Mexico who performed the initial microblading and had noticed some temporary improvement. She also tried Quadriderm cream, sulfur cream, and mupirocin ointment with no resolution of her symptoms. She mentioned having a red lip liner tattoo in the past with no local reactions or complications.

Physical Examination:
Pertinent physical exam revealed an erythematous and indurated plaque over the entire left eyebrow and a smaller plaque with crusting over right lateral eyebrow.

Laboratory Data:
Serum angiotensin converting enzyme was within normal limits. Chest X-ray was unremarkable.

Histopathology:
Results of a 2mm punch biopsy showed discrete granulomas in the lower portions of the dermis, most of which were naked with no surrounding cuff of mononuclear cells. There was fine-black intracellular particulate material in the cytoplasm of histiocytes in the papillary dermis, but no polarizable material was evident. PAS, Fite, and tissue gram stains revealed no microorganisms.

Clinical Course:
At the patient's initial visit, the clinical presentation and patient history suggested a possible diagnosis of delayed contact dermatitis and treatment was initiated with Clobetasol 0.05% topical ointment twice daily. At her two week follow up, the patient reported compliance with treatment and experienced some mild improvement of the pruritis and crusting, but the rash was still present. Because of the lack of significant improvement, intralesional Kenalog 0.5mL for a total of 2.5 mg/mL was injected to both eyebrows. Four weeks later, the patient had no noticeable improvement. It was then decided to proceed with a biopsy, and a 2mm punch biopsy was performed over the left eyebrow. Histopathology, as described above, showed naked granulomas in the dermis and pigment in the papillary dermis. The treatment plan at this time includes a trial of 2mL of 5.0 mg/mL intralesional Kenalog injections every four to six weeks and reassessment of treatment if there is no significant improvement after six rounds.

Diagnosis:
Chronic granulomatous reaction secondary to microblading pigment

Points of Emphasis:

Microblading is a service being offered across many beauty salons and med spas and is commonly performed by licensed estheticians. It has become a prominent procedure over the last few years. It is an innovative, semi-permanent cosmetic tattooing procedure that uses a scalpel-like tool with fine needles in a row to create hair-like strokes while depositing pigment into the superficial skin along the eyebrows till the papillary dermis layer. Microblading utilizes the synthetic pigment that contains no heavy metals and whose non-dispersible property makes it difficult to retain in the skin, and hence, qualifies it as semi-permanent in nature, lasting usually between 12-18 months. As demand for microblading services rises, there is also a rise in under qualified professionals performing the procedure. The tools required to perform microblading and its variations, including nano-blading, 3D or 6D brows, and micro-shading, may be minimal, but the procedures require technical mastery. Due to its novelty, there is limited research on its side-effects and long-term complications. While only a few perform microblading, dermatologists should be aware of this procedure and its serious risks.

Although patients are consulted prior to the procedure, undergo a pre-procedure analysis of their skin, and the pigment is only applied to the superficial dermis, there can be unintended consequences. There are only a few cases reported in the medical literature of dermatologic complications occurring secondary to semi-permanent eyebrow tattooing, including cutaneous sarcoid, sarcoid-like reactions, koebernization, and delayed granulomatous reactions. Wang and colleagues reported spontaneous resolution after six months of a granulomatous reaction that occurred three months after microblading. Klontz and team attempted treatment with topical corticosteroids, 5% imiquimod cream, and erbium: YAG and 595-nm pulsed-dye laser therapy with limited improvement and continued patient discomfort. Another case of a delayed granulomatous reaction to tattoo ink that presented after 1.5 years was successfully treated with Dermojet and triamcinolone acetonide A10 1:1 diluted with lidocaine. Kluger reports options for treatment in granulomatous tattoo reactions include clobetasol propionate for 3 months, oral hydroxychloroquine, oral tetracyclines, allopurinol and oral methotrexate. In another report, five cases of delayed granulomatous reactions to tattoo pigment in the eyebrows were successfully treated with multiple rounds of topical and intralesional corticosteroid injections. Laser removal treatment was not routinely recommended due to systemic anaphylaxis from the release of pigment particles into the bloodstream. Therefore, we chose to start with multiple rounds of minimally invasive intralesional Kenalog injections and will reassess after a maximum of six rounds if no improvement is noted.

As in our case, it can be very challenging when persistent reactions secondary to microblading tint present to dermatologists. Previous case studies have reported resolution of granulomatous tattoo reactions within three to six months with intralesional steroid injection. However, our patient has been experiencing recurrence of symptoms for over 18 months despite prolonged treatment. These cases highlight the potential for severe and chronic reactions that can greatly affect a patient’s life and be financially, physically, and mentally taxing. Our case emphasizes the need for qualified professionals to perform microblading as these individuals have the knowledge, tools, and training to prevent, recognize, treat, and educate patients on the delayed skin pathologies associated with microblading. Clients considering microblading deserve to be counseled appropriately about the physical and psychological risks associated with undergoing this cosmetic procedure.

References:

1. Tierney, E., & Kavanagh, G. M. (2020). Koebnerization secondary to microblading. Journal of Cosmetic Dermatology, 20(4), 1040–1041. https://doi.org/10.1111/jocd.13695

2. Marwah, M. K., Kerure, A. S., & Marwah, G. S. (2021). Microblading and the science behind it. Indian Dermatology Online Journal, 12(1), 6. https://doi.org/10.4103/idoj.idoj_230_20
3. Tukenmez Demirci, G., Mansur, A. T., Yıldız, S., & Güleç, A. T. (2016). Is it a sarcoidal foreign-body granuloma or a cutaneous sarcoidosis on a permanent eyebrow make-up? Journal of Cosmetic and Laser Therapy, 1–3. https://doi.org/10.3109/14764172.2015.1052516
4. Leight-Dunn, H., Lemly, V., & Chapas, A. (2021). Delayed granulomatous reaction after eyebrow microblading. Dermatologic Surgery, 48(1), 142–143. https://doi.org/10.1097/dss.0000000000003236
5. Klontz, K. C., Lambert, L. A., Jewell, R. E., & Katz, L. M. (2005). Adverse effects of cosmetic tattooing: An illustrative case of granulomatous dermatitis following the application of permanent makeup. Archives of Dermatology, 141(7). https://doi.org/10.1001/archderm.141.7.918
6. Quint, K. D., Genders, R. E., & Vermeer, M. H. (2012). A delayed granulomatous reaction to a cosmetic tattoo of the eyebrows: A report of total regression after intralesional corticosteroid injections. Dermatologic Surgery, 38(6), 951–953. https://doi.org/10.1111/j.1524-4725.2012.02360.x
7. Kluger, N. (2021). Delayed granulomatous reaction after eyebrow microblading. Dermatologic Surgery, 48(4), 472–473. https://doi.org/10.1097/dss.0000000000003361

SUBCUTANEOUS FAT NECROSIS OF THE NEWBORN

Case No. 31 **PRESENTER:** Morgan Fletcher, MD
Tue Felix Nguyen, BS
Alison Messer, MD
Sandra Osswald, MD
San Antonio, TX

History:
A 4-week-old male patient, born at 36 weeks 6 days via urgent C-section, was found to have hypoxic-ischemic encephalopathy, pulmonary hypertension, and hypertrophic cardiomyopathy. The patient underwent therapeutic hypothermia protocol treatment starting at 6hrs of life. Dermatology was consulted due to the appearance of a nodule on the occipital protuberance, present for approximately two weeks.

Physical Examination:
Physical examination showed a 2.5 cm erythematous, firm, mobile nodule to the inferior posterior scalp with some overlying crusting and minimal surrounding erythema.

Laboratory Data:
MRI brain showed a faint abnormality to the subcutaneous tissue overlying the occipital protuberance without noted connection to the underlying brain/meningeal matter.
The patient was found to have mild hypercalcemia at the time of diagnosis (11 mg/dL), therefore his calcium levels were trended weekly until the resolution of hypercalcemia.

Histopathology:
Punch biopsy was performed and showed lobular panniculitis with lymphohistiocytic inflammation, lipid crystals, and calcifications.

Clinical Course:
No further treatment was pursued. The patient healed well after punch biopsy, and the occipital lesion resolved completely by age 4months.

Diagnosis:
Subcutaneous Fat Necrosis of the Newborn

Points of Emphasis:
Subcutaneous fat necrosis of the newborn (SCFN) is a rare, self-limited panniculitis, typically resolving within several weeks to months without scarring.
SCFN classically presents as red or violaceous subcutaneous nodules or plaques, most commonly on the buttocks, trunk, proximal extremities, or cheeks of infants.[1]
SCFN involving the scalp has been seldomly reported in the literature. Our case highlights the importance of thorough skin checks for any newborn receiving hypothermic therapy for hypoxemic-ischemic encephalopathy.

References:
1. Coondoo A, Lahiry R, Choudhury A, Sengupta S. Tender skin nodules in a newborn. Indian J Dermatol. 2013;58(4):328.
2. Xu Z, Rubin A, Oboite M. Subcutaneous fat necrosis of the newborn presenting as circular alopecia: a novel presentation. Pediatr Dermatol. 2021;38(4):982-983.

BULLOUS PEMPHIGOID IN AN INFANT

Case No. 32 **PRESENTER:** Fred Ghali, MD
Chris Bandel, BS
Clay Cockerell, MD
Frisco, TX
Dallas, TX

History: 5 1/2-month-old male presents on 3/30/2022 with a 1.5 week history of acute blistering of predominantly feet and some hands. No history of recent arthropod bites, stings, or injuries. PMH is otherwise unremarkable. Immunizations were up to date and the family reported that the patient had received 4-month-old immunizations a few weeks prior to the onset of the eruption. The patient was using mid potency topical steroid triamcinolone 0.1% cream with little improvement. Family history and social history were unremarkable.

Physical Examination: Large tense bullae were present on both plantar regions, with erythematous, urticarial plaques located on the dorsal feet. Some bullae had opened with erythematous, raw appearing underlying tissue. The hands were involved to a much less extent. The face, mucous membranes, trunk, groin and the remaining areas were unaffected.

Laboratory Data: No pertinent labs

Histopathology: There is a subepidermal blist3er with an infiltrate of lymphocytes and eosinophils, and in one area, a spongiotic focus as well. Immunofluorescence studies revealed a strong linear binding of IgG and C3, but also some binding of IgM.

Clinical Course: Treatment consisted of twice daily applications of class 1 high potency topical steroid (clobetasol ointment 0.05%) to affected areas. Response was observed within a few days, with improvement of both the urticarial plaques and bullae. At follow up in 2 weeks, the lesions had resolved, and only residual hyperpigmentation was observed.

Diagnosis: Bullous Pemphigoid in an Infant

Points of Emphasis:

Although rare, bullous pemphigoid (BP) in infants and children is still the second most common blistering disease in the pediatric population, behind chronic bullous disease of childhood. Individual lesions of bullous pemphigoid in children and adults are indistinguishable clinically and histopathologically, but differences in presentation, response to therapy, and clinical course do exist between the two age groups. The clinical presentation in the pediatric population is more acute and severe than seen in adults, and the distribution of lesions is more limited in the pediatric population. Acral sites are almost always affected in pediatric patients, with more limited involvement of sites that are more commonly affected in the adult population (genitals, mucous membranes, arms, legs, trunk). Circulating levels of BP antigen-2 antibodies are higher in children than measured in adults. (1) The clinical course of pediatric BP is also distinct from adults, with a more acute presentation of lesions in children. Lesions typically resolve much more quickly with treatment, and recurrence is uncommon, as opposed to the slow responding and more chronic nature of BP in adults.

Even within the pediatric population, a distinction has been made by Waisbourd-Zinman, et al between BP of infancy and BP occurring between 1 and 18 years of age. This group noted two peaks of incidence in pediatric BP – one in the first year of life and another in year 8. Distinguishing features include more frequent involvement of the mucous membranes and genital areas in older children. By comparison, in infants there is almost always acral involvement, and genital lesions are rare. (2)

A possible association of pediatric BP and vaccination has been a subject of debate, as there has been a temporal association between vaccination date and onset of BP, ranging from a few hours to a few months. The diphtheria, pertussis, tetanus vaccine is most frequently implicated. (3) An association is difficult to prove because of the high frequency of immunization in the first year of life, but recurrence has been reported in 3 patients after additional vaccinations. (3) Regardless, BP of infancy is not considered a contraindication for future vaccinations.

Treatment of BP of infancy is not well-defined because of the limited number of cases in the literature (fewer than 100). Success is most commonly reported using either high potency topical steroids or oral corticosteroids at a dosage of 1 to 2 mg/kg/day, often resulting in rapid resolution within days to weeks. Steroid sparing agents, such as dapsone, methotrexate or mycophenolate mofetil, can be instituted if necessary. The treatability and long-term remission rates underscore the importance of considering the diagnosis of bullous pemphigoid when evaluating pediatric patients with a possible bullous disease.

References:

1. Welfringer-Morin A, Bekel L, Bellon N, et al.: Long-term evolving profile of childhood autoimmune blistering diseases: retrospective study on 38 children. J Eur Acad Dermatol Venereol. 2019, 33:1158-63. 10.1111/jdv.15456
2. Waisbourd-Zinman O, Ben-Amitai D, Cohen AD, Feinmesser M, Mimouni D, Adir-Shani A, Zlotkin M, Zvulunov A. Bullous pemphigoid in infancy: Clinical and epidemiologic characteristics. J Am Acad Dermatol. 2008 Jan;58(1):41-8. doi: 10.1016/j.jaad.2007.08.010. Epub 2007 Oct 22. PMID: 17945382.
3. de la Fuente S, Hernández-Martín Á, de Lucas R, González-Enseñat MA, Vicente A, Colmenero I, González-Beato M, Suñol M, Torrelo A. Postvaccination bullous pemphigoid in infancy: report of three new cases and literature review. Pediatr Dermatol. 2013 Nov-Dec;30(6):741-4. doi: 10.1111/pde.12231. Epub 2013 Oct 11. PMID: 24125034.

INTERFACE DERMATITIS IN AN AFRICAN-AMERICAN PEDIATRIC MALE PATIENT

Case No. 33 **PRESENTER:** Daniel Nguyen, DO
Steven E. Weis, DO
Clay J. Cockerell, MD
Fort Worth, TX
Dallas, TX

History: 5-year old male patient presented with lesions that began 2 years prior occurring on the face and extremities that waxed and waned with no lesions on exam at initial visit. Eruption described as red and itchy and resolved with dark and light skin color changes. Pediatric dermatologist performed skin biopsy 1 year prior and patient was referred to rheumatology. Parents report ANA testing was negative. Rheumatologist told patient there was no concern and no follow-up was needed. It was recommended to return if new eruption occurred. After a little more than a year, patient returned with new lesions. Parents had been applying combination topical clotrimazole, betamethasone, and neomycin daily without resolution.

Physical Examination: Lesions of concern on his right upper arm and lower legs showed scattered erythematous annular thin plaques without scaling. On extremities, periocular, and perioral skin were scattered erythematous hypo- and hyper- pigmented macules and patches from prior lesions.

Laboratory Data: None

Histopathology: Similar interface dermatitis as previous biopsy. New findings included parakeratosis that was relatively confluent. The parakeratosis was not previously seen in the original sections in 2020. There are some dyskeratotic keratinocytes. PAS stains negative for hyphae. Differential diagnostic possibility includes pityriasis lichenoides and connective tissue diseases.

Clinical Course: Patient was sent new lab order for ANA testing. Parents declined testing. Patient was recommended to start photoprotection and prescriptions for topical steroid and oral hydroxychloroquine. Parents had started applying sunscreen and using photoprotective clothing, however, they declined prescriptions as rash spontaneous resolved at the time.

Diagnosis: Interface dermatitis with close monitoring for manifestation of connective tissue disease such as cutaneous lupus

Points of Emphasis: Interface dermatitis is a histopathological reaction pattern that can encompasses a variety of overlapping inflammatory dermatoses. These include connective tissue diseases such as cutaneous lupus. Chronic Cutaneous Lupus Erythematosus includes Discoid Lupus Erythematosus (DLE) and tumid lupus. DLE presents commonly on the face and scalp and especially concha bowls of the ears. DLE lesions show indurated erythematous plaques with adherent scale that can resolve with hyper- or hypopigmented patches, atrophy, scarring, and/or alopecia. Tumid lupus shows a photo-distributed pattern of pink edematous papules and plaques; DLE may be associated with progression to SLE in about 30% of cases.
Hydroxychloroquine is often used in pediatric patients with systemic lupus while the cutaneous disease also responds well. Hydroxychloroquine is maximally dosed at < 5 mg/kg daily of actual body weight. As the risk of hydroxychloroquine-induced retinopathy is unknown in children, an annual examination should be considered.

References:

1. Hsi, A. C., & Rosman, I. S. (2018). Histopathology of Cutaneous Inflammatory Disorders in Children. Pediatric and Developmental Pathology, 21(2), 115–149. doi:10.1177/1093526617748781
2. Chew, Christopher Y., et al. "Hydroxychloroquine in dermatology: new perspectives on an old drug." Australasian Journal of Dermatology 61.2 (2020): e150-e157.

DISCOID PRESENTATION OF NONSCARRING ALOPECIA OF ACTIVE SYSTEMIC LUPUS ERYTHEMATOSUS

Case No. 34 **PRESENTER:** Timothy Freeman
Dipti Anand, MD
Kris McKay, MD
Warner Robins, GA
Atlanta, GA

History: A 21-year-old woman with recently diagnosed systemic lupus erythematosus (SLE) presented with hypopigmented, atrophic plaques associated with alopecia across her scalp and hyperpigmented, atrophic plaques on her cheeks of three months duration, concomitant with her initial flare.

Physical Examination: Examination of the scalp revealed numerous well circumscribed, coalescing atrophic plaques with associated alopecia. Retained follicular ostea were noted, compatible with a nonscaring alopecia. The initial clinical differential diagnosis was discoid lupus vs alopecia areata.

Laboratory Data: The patient's ANA, RNP antibodies, and anti-chromatin antibodies came back as positive. While results for Smith, SSA/SSB, and anti-DDS antibodies were negative. CRP, C3, and C4 levels were within normal limits.

Histopathology: Biopsy of a plaque on the parietal scalp demonstrated normal total follicle number, near total catagen/telogen shift and dramatic miniaturization, along with panfollicular inflammatory infiltrate involving the hair bulbs, the follicular isthmus, and the infundibulum. Lymphocytes and plasma cells featured prominently. There was also subtle vacuolar alteration involving the mid to upper isthmus of several follicles. A CD123 study highlighted substantial perivascular and perifollicular clusters of plasmacytoid dendritic cells (PDC's). A T. pallidum study was negative. There were no findings of scaring alopecia and none of the other features classically associated with alopecia due to discoid lupus. In short, these early discoid lesions of systemic lupus demonstrated histopathologic findings identical to those described for the nonscarring alopecia of systemic lupus, a pattern which resembles alopecia areata but with a panfollicular infiltrate, plasma cells and slight vacuolar alteration involving the follicular isthmus. PDC's would also be seen in alopecia areata, but not typically in this distribution.

Clinical Course: The patient was started on clobetasol, and scalp plaques displayed new hair growth 15 days post treatment. Over the course of the 15 days, the patient had developed additional hyperpigmented, scaly plaques on her left arm consistent with lupus dermatitis.

Diagnosis: Discoid presentation of nonscarring alopecia of systemic lupus erythematosus

Points of Emphasis: Alopecia associated with active systemic lupus is a nonscarring alopecia with histopathology similar to alopecia areata. It classically presents as a diffuse alopecia, but in our case presented in a pattern analogous to discoid lesions of systemic lupus. Since this condition represents a nonscarring alopecia, complete recovery is theoretically possible if the inflammation can be controlled long term. This case suggests that acute discoid lesions of SLE associated with alopecia may begin with pathophysiology identical to the nonscarring alopecia of active SLE. The findings lead us to hypothesize that the nonscarring alopecia of active SLE and alopecia associated with chronic discoid lupus may not be distinct conditions, as their classical descriptions would imply, but instead simply different stages of a similar or identical pathophysiologic process. Comparative study of the very early histopathologic changes of alopecia in skin limited discoid lupus would be required. The alternate hypothesis would be an SLE eruption analogous to classic alopecia areata.

References: (At least two recent pertinent published references)

1. Moghadam-Kia, S and Franks, A. "Autoimmune Disease and Hair Loss." *Dermatologic Clinics*. 2013; 31 (1), pp. 75-91.
2. Udompanich S, Chanprpaph K, and Suchonwanit P. "Hair and Scalp Changes in Cutaneous and Systemic Lupus Erythematosus." *American Journal of Clinical Dermatology*. 19, pp. 679-694.

ROWELL SYNDROME

Case No. 35

PRESENTER: Manjot Mashiana, DO
Gary Cox, MD
Clay J. Cockerell, MD
Victoria, Texas
Dallas, Texas

History: Patient is a 38-year-old female who was following up for acute cutaneous lupus erythematosus on the face. She was started on a Plaquenil by her PCP as well as a prednisone regime at her previous visit 5 years ago. She has been on hydroxy twice a day since 2017. She tried methotrexate in the past without relief.

Medical history includes vitiligo, lupus, Sjogren's, fibromyalgia, rheumatoid arthritis, and a surgical history of cholecystectomy and recent hysterectomy. At this initial visit, she was started on clobetasol topical cream twice a day for 2 weeks and given a potassium IM shot; advised to use broad spectrum sunscreen, sun protective clothing, topical steroids.

Patient returned about 10 days later for a follow up and stated she felt the topical steroid helped dry flares to the face, however, on the trunk and extremities, the flares were still generalized, spreading, and worsening. A biopsy was taken of the non-specified rash on her back. She was to continue using clobetasol and taking prednisone and Plaquenil. A referral to Rheumatology was pending given her medical history.

Physical Examination: Coalescing, erythematous, photo-distributed, morbilliform macules and papules distributed on left forehead, left cheek, and right cheek

Multiple, polymorphous and target-like erythematous patches and plaques distributed on the body throughout

Depigmented patches distributed on trunk and on bilateral eyelids

Histopathology: Direct immunofluorescence staining for IgG, IgA, IgM, C3 and fibrinogen were negative. Microscopically, there is a superficial and deep infiltrate of lymphocytes, but also an interface change with dyskeratotic keratinocytes and focal epidermal necrosis with blister formation that has re-epithelialized. This represents a combination of lupus erythematous and erythema multiforme and the clinical photograph would be consistent with that diagnosis as well. Given that the patient has known acute lupus erythematous, that diagnosis would seem to correlate with these findings. The negative immunofluorescence studies do not exclude the diagnosis.

Clinical Course: Followed up for nonbulious erythema multiform, she continued to have multiple polymorphous and target-like erythematous patches and plaques distributed on her face, neck, and trunk. She was prescribed prednisone for one month at her last visit, which she continued for another month. Rheumatology became primary as she has concurrent lupus and Sjogren's Syndrome accompanying the erythema multiform and started the patient on Benlysta infusion, methotrexate, and prednisone daily.

Diagnosis: Rowell Syndrome

Points of Emphasis: Rowell syndrome is a rare disease characterized by erythema multiforme (EM)-like lesions in patient with lupus erythematosus (LE). Usually, women are disproportionately affected with a ratio of eight to one, attributed to estrogen signaling. About 20% of cases are from India. Worldwide, the median age is 32 years old, however in Indian patients, the median age is 23 years old. Some reports found medications such as norfloxacin, terbinafine, sodium valproate, and omeprazole to induce Rowell syndrome. Patient's typically present with painful, pruritic, erythematous, plaques or blisters on the chest, back, arms, legs, hands, feet, and face.

Diagnosing Rowell syndrome, one must have all four of the following: presence of chronic cutaneous LE, EM-like lesions, negative direct immunofluorescence, and positive speckled ANA, anti-Ro/SSA, or anti-La/SSB antibodies. One must also have one of the following: absence of infectious or pharmacological triggers, absence of lesions in the acral or mucosal areas, or presence of at least one addition systemic LE criteria. Histologically, periadnexal lymphocytic infiltrate and plasmacytoid dendritic cells are visible. There is an association of Rowell syndrome with Sjogren syndrome and rheumatoid arthritis, as our patient had here; as well as Kikuchi-Fujimoto disease and macrophage activation syndrome.

Differential diagnosis includes the likes of discoid LE, acute cutaneous LE, subacute cutaneous LE, bullous systemic LE, and erythema multiforme. Treatment usually consists of topical and oral steroids, dapsone, immunosuppressive drugs, and antimalarials. Patients tend to respond well to therapy.

References:

1. Lee, A., Batra, P., Furer, V., Cheung, W., Wang, N., & Jr, A. F. (2009). Rowell syndrome (systemic lupus erythematosus + erythema multiforme). *Dermatology Online Journal*, 15(8). http://dx.doi.org/10.5070/D35pf8k3r2 Retrieved from https://escholarship.org/uc/item/5pf8k3r2
2. Gallo L, Megna M, Festa B, Stellato P, di Pinto R, Fabbrocini G, Ferrillo M. Rowell Syndrome: A Diagnostic Challenge. J Clin Aesthet Dermatol. 2020 Apr;13(4):40-42. Epub 2020 Apr 1. PMID: 33144910; PMCID: PMC7605390.
3. Sethy M, Padhan P, Abirami C, Maikap D. Rowell's Syndrome: A Case Report and Literature Overview. Indian Dermatol Online J. 2021 Jun 20;12(4):608-610. doi: 10.4103/idoj.IDOJ_554_20. PMID: 34430473; PMCID: PMC8354387.

ATYPICAL LOBULAR PANNICULITIS SUSPICIOUS FOR SUBCUTANEOUS PANNICULITIS-LIKE T CELL LYMPHOMA (SPTCL) VS. LUPUS ERYTHEMATOSUS PANNICULITIS

Case No. 36

PRESENTER: Christian Scheufele, DO
Stephen E. Weis, DO
Amber Souers, MD
Amanda Hernandez, MD
Fort Worth, TX

History: A 52-year-old male with a history of "sarcoidosis". He has no other significant past medical history presented with an 8-month history of recurrent, progressive facial swelling now involving the right side of his face. He has a history of a nodule on his forehead in 2013 that was surgical excised. Histopathology was consistent with acute and chronic granulomatous inflammation with fat necrosis and fibrosis. Immunostaining was performed but showed no evidence of a lymphoproliferative disorder. Since 2013, he has had multiple small nodules on his cheeks and forehead that spontaneously regress. Case is presented for input on diagnosis.

Physical Examination: Poorly defined, slightly erythematous, boggy, indurated mass without epidermal change involving the right pre-auricular and malar cheek. There is infiltration and edema of the superior and inferior eyelids, limiting the patient's vision.

Laboratory Data: Complete blood count showed mild thrombocytopenia which was stable from over several years. Metabolic panel including kidney, liver function, and calcium was within normal limits. Serum angiotensin converting enzyme (ACE) level was unremarkable. Quantiferon Gold was negative.

Histopathology: Punch biopsy shows a lobular lymphohistiocytic panniculitis with areas of karyorrhexis and cytophagocytosis. The lymphocytes are slightly enlarged and, in multiple foci, there was noted rimming of CD8 positive T-cells around adipocytes. Because of these atypical features, T-cell receptor gene rearrangement studies were performed. TCR was negative for clonality, a prominent peak was noted at 185 base pairs.

Clinical Course: Patient had no systemic symptoms including fever, lymphadenopathy, unintentional weight loss. The patient previously underwent exploratory surgery which was aborted mid procedure due to no definable mass that could be biopsied without further putting the patient at risk for iatrogenic injury. He was then referred to Rheumatology and was started on 40 mg of prednisone which improved the swelling. Rheumatology referred the patient to Dermatology for further treatment of suspected "cutaneous sarcoidosis." As his disease course has been intermittently symptomaticover 9 years duration, he is currently being treated for lupus erythematosus panniculitis with hydroxychloroquine 400 mg daily and tapering doses prednisone. His prednisone has been reduced gradually to 15 mg daily.

Diagnosis: Atypical lobular panniculitis suspicious for subcutaneous panniculitis-like T cell lymphoma (SPTCL) vs. lupus erythematosus panniculitis

Points of Emphasis: Lupus erythematosus panniculitis (LEP) and subcutaneous panniculitis-like T cell lymphoma (SPTCL) can be profoundly difficult to distinguish clinically and histopathologically. SPTCL is a subtype of cutaneous T cell lymphoma. It typically presents with a CD8+ and α/β T-cell receptor lymphocytic phenotype and follows an indolent course. SPTCL confers a higher risk of morbidity and mortality than LEP as patients are at an increased risk of hemophagocytic lymphohistiocytosis (HLH). TCR gene rearrangement may demonstrate a monoclonal population in SPTCL; however, clonal populations may also arise in the setting of autoimmune diseases. Ki-67 staining has also been shown to be positive for SPTCL lymphocyte populations. Treatments include systemic and intralesional corticosteroids. Historically, CHOP cytotoxic chemotherapy has been employed although this has fallen out of favor due to SPTCL's indolent nature.

Lupus erythematosus panniculitis, commonly used interchangeably with the term "lupus profundus," is a rare variant of lupus erythematosus (LE), comprising only 1-3% of cutaneous LE. It has a predilection for the face and upper arms of middle-aged women. It typically presents as an indurated mass with or without lipoatrophy. Discoid lupus erythematosus and systemic lupus erythematosus have been found to co-exist anywhere from 30-70% and 10-50% of patients with LEP, respectively. Histopathologically, LEP presents similarly to SPTCL as a lobular panniculitis rimming of adipocytes. Clues for diagnosis of LEP include the presence of lymphoid follicles with a significant B cell population and the presence of plasma cells. Treatment typically consists of antimalarials, systemic corticosteroids, methotrexate, and occasionally surgical excision.

References:

1. Bosisio, F., Boi, S., Caputo, V., Chiarelli, C., Oliver, F., Ricci, R., & Cerroni, L. (2015). Lobular panniculitic infiltrates with overlapping histopathologic features of lupus panniculitis (lupus profundus) and subcutaneous T-cell lymphoma: a conceptual and practical dilemma. The American journal of surgical pathology, 39(2), 206–211.
2. Guenova, E., Schanz, S., Hoetzenecker, W., DeSimone, J. A., Mehra, T., Voykov, B., ... & Cozzio, A. (2014). Systemic corticosteroids for subcutaneous panniculitis-like T-cell lymphoma. British Journal of Dermatology, 171(4), 891-894.
3. LeBlanc, R. E., Tavallaee, M., Kim, Y. H., & Kim, J. (2016). Useful parameters for distinguishing subcutaneous panniculitis-like T-cell lymphoma from lupus erythematosus panniculitis. The American journal of surgical pathology, 40(6), 745-754.

POSSIBLE TEMPORAL ARTERITIS

Case No. 37 **PRESENTER:** Julia Just, Medical Student
Angela Styles, MD
Chris Bandel, BS
Clay Cockerell, MD
Niagara Falls, Canada

History: A 78-year old man presented with a 4-week history of an extremely painful purpuric rash located on the central frontoparietal scalp. He reported a concurrent history of swelling and pain over the temporal artery regions, periodic pain when chewing, and myalgia. The patient had a history of blindness in the right eye due to glaucoma but noted no worsening of vision or involvement of either eye since the onset of symptoms.

Physical Examination: A 8.7 x 9.5 x 0.2 cm red and purple purpuric rash with areas of ulceration and overlying eschar located on the frontoparietal scalp. Palpation of the scalp and temporal region elicited exquisite tenderness.

Laboratory Data: Erythrocyte sedimentation rate (ESR) of 50 mm/hr at initial presentation and 9 mm/hr two weeks later. Systemic workup (CT of chest) was negative for aortic involvement. Temporal artery biopsy showed no evidence of temporal arteritis. Wound culture with gram stain was notable only for normal skin flora, not including *S. aureus, P. aeruginosa,* or beta-hemolytic streptococci.

Histopathology: Both sections of parietal scalp shave revealed similar changes suggestive of cutaneous infarction, possibly related to underlying temporal arteritis. There was extensive ischemic necrosis of all adnexal structures with thrombosis of several blood vessels and degeneration of collagen with necrosis of the overlying epidermis. No evidence of herpesvirus was seen in these sections and clinically, these changes are not characteristic of that process.

Clinical Course: This patient was initially treated for the painful rash with acyclovir and gabapentin under suspicion of shingles, without any improvement. Clinical presentation and scalp skin shave biopsy results indicating temporal arteritis initiated the treatment of high dose prednisone (1mg/kg) for 2 weeks. The patient noted slight improvement of the painful rash after treatment with steroids but developed pneumonia, hyponatremia and sepsis approximately 6 weeks after the initial presentation of symptoms. He was hospitalized and treated with broadspectrum IV antibiotic coverage. High dose prednisone was discontinued at this time. The patient reported the most significant improvement of the painful rash after hospitalized treatment with antibiotics. Further management of the scalp lesion consisted of local wound debridement. Due to the size and extent of the lesion, the patient was unable to tolerate any further local debridement and was consulted for skin graft repair. Approximately 6 months after the initial rash presentation, the patient was treated with a split-thickness skin graft repair with the left thigh chosen as the donor site.

Diagnosis: Possible temporal arteritis

Points of Emphasis: Giant cell temporal arteritis is a medium- and large-vessel vasculitis and the most common cause of vasculitis among the elderly. The gold standard for diagnosis is a temporal artery biopsy. However, the diagnosis of GCA can pose a clinical challenge as up to 40% of biopsies have been shown to be negative in patients with clinical findings consistent with GCA. Corticosteroid treatment should not be withheld or delayed while awaiting biopsy results or in the event of a negative biopsy, as the vascular involvement has the potential to cause serious complications such as vision loss and extensive skin necrosis overlying the involved vasculature.

References:

1. Deyholos, Christine, et al. "Impact of Temporal Artery Biopsy on Clinical Management of Suspected Giant Cell Arteritis." *Annals of Vascular Surgery*, vol. 69, 2020, pp. 254–260., https://doi.org/10.1016/j.avsg.2020.06.012.
2. Smith, Jonathan H., and Jerry W. Swanson. "Giant Cell Arteritis." *Headache: The Journal of Head and Face Pain*, vol. 54, no. 8, 2014, pp. 1273–1289., https://doi.org/10.1111/head.12425.

CUTANEOUS T CELL LYMPHOMA WITH PAPILLARY DERMAL EDEMA

Case No. 38

PRESENTER: Manjot Mashiana, DO
Matthew Reynolds, PA
Scott Dinehart, MD
Clay Cockerell, MD
Russellville, AR
Dallas, TX

History: A 67-year-old male, with no pertinent medical or surgical history, was originally seen on July 22, 2022 for atopic dermatitis. Previous biopsies revealed spongiotic dermatitis. At that time, the patient as started on Cibinqo 200mg tablet taken in the mornings with breakfast. He returned for a follow up one month later with symptomatic relief, however with worsening dermatitis of the patches becoming more plaque-like. He did not experience pain, spreading of the dermatitis, or redness. Patient does not have any known drug allergies. Medications include clobetasol and Opzelura.

Physical Examination: Lichenification, post inflammatory hyperpigmentation, and post inflammatory hypopigmentation distributed on the left lower back, right lower back, left forearm, right forearm, right hand, left hand, posterior neck, abdomen, right thigh, left thigh, right pretibial region, and left pretibial region. Total body surface area: 15%.

Well demarcated, geometric eczematous patches located on right superior medial lower back, left inferior lateral midback, and right superior lateral lower back. These three locations were biopsied.

Histopathology: All three sections reveal similar changes, namely focal areas of atypical lymphoid cells in the papillary dermis. Of interest is the papillary is markedly edematous which correlates with the clinical photograph of the elevated multiple papules. Many of the lymphoid cells are strikingly atypical.

The papillary dermal edema is a very unusual finding and suggests this could possible represent HTLV-1 cutaneous T-cell lymphoma which is associated with a viral infection and is seen in patients in the southeastern United States and in the Caribbean. It would be important to patients such as this to evaluate with evidence of circulating leukemic cells as well as possibly elevated calcium levels that may be associated with this process.

Clinical Course: Patient was advised on skin care and emollient use. He was to continue Cibinqo treatment for 2 months. Punch biopsies were taken of the three locations with well demarcated, geometric eczematous patches.

Patient returned for a follow up visit two weeks post biopsy suggestive of Cutaneous T-Cell Lymphoma. Physical examination revealed poikilodermatous patches with scaling distributed on the body throughout. Cibinqo treatment was discontinued, and he was referred to a cancer treatment center for further care.

Diagnosis: Cutaneous T-Cell Lymphoma with Papillary Dermal Edema

Points of Emphasis:
CTCL consists of clonal proliferation of atypical T-cells that home to the skin. Lesions manifest as patches, plaques, erythroderma, and/or tumors with or without lymph node involvement.[1] Mycosis fungoides (MF) is one of the most common subtypes of cutaneous T-cell lymphoma, lesions are typically confined to the bathing trunk distribution.[2] MF is mostly seen in older male patients, with a peak age of 55 to 60 years.[3-5] MF is a mature T-cell non-Hodgkin lymphoma, accounting for four percent of all cases of non-Hodgkin lymphomas, with an incidence of six cases per million per year. Patients can present with a premycotic period lasting from months to decades with nondiagnostic biopsies.[6] Repeat biopsies must be obtained in patients with suspected MF.

Differential diagnosis includes eczema, psoriasis, parapsoriasis, photodermatitis, atopic dermatitis, or drug reaction. Human T-lymphotropic virus type I (HTLV-I) has been reported in some patients with MF.[7] This is also seen in the malignant cells of patients with adult T-cell leukemia-lymphoma (ATL); however, ATL will have lymphoma in the nodes, liver, bone, and central nervous system. A scoring system algorithm consisting of clinical, histopathological, molecular biologic, and immunopathologic criteria is utilized to diagnose MF.

Treatment options include topical steroids, NBUVB, PUVA, Mogalizumag, targretin or topical nitrogen mustards. Patients with progressive tumors or lymph node involvement may require systemic chemotherapy.[8-11]

References:

1. Demierre MF, Gan S, Jones J, Miller DR. Significant impact of cutaneous T-cell lymphoma on patients' quality of life: results of a 2005 National Cutaneous Lymphoma Foundation Survey. Cancer 2006; 107:2504.
2. Kazakov DV, Burg G, Kempf W. Clinicopathological spectrum of mycosis fungoides. J Eur Acad Dermatol Venereol 2004; 18:397.
3. Sant M, Allemani C, Tereanu C, et al. Incidence of hematologic malignancies in Europe by morphologic subtype: results of the HAEMACARE project. Blood 2010; 116:3724.
4. Bradford PT, Devesa SS, Anderson WF, Toro JR. Cutaneous lymphoma incidence patterns in the United States: a population-based study of 3884 cases. Blood 2009; 113:5064.
5. Fujita A, Hamada T, Iwatsuki K. Retrospective analysis of 133 patients with cutaneous lymphomas from a single Japanese medical center between 1995 and 2008. J Dermatol 2011; 38:524.
6. Morales MM, Olsen J, Johansen P, et al. Viral infection, atopy and mycosis fungoides: a European multicentre case-control study. Eur J Cancer 2003; 39:511.
7. Wood GS, Salvekar A, Schaffer J, et al. Evidence against a role for human T-cell lymphotrophic virus type I (HTLV-I) in the pathogenesis of American cutaneous T-cell lymphoma. J Invest Dermatol 1996; 107:301.
8. Zackheim HS, Kashani-Sabet M, Amin S. Topical corticosteroids for mycosis fungoides. Experience in 79 patients. Arch Dermatol 1998; 134:949.
9. Olsen EA, Hodak E, Anderson T, et al. Guidelines for phototherapy of mycosis fungoides and Sézary syndrome: A consensus statement of the United States Cutaneous Lymphoma Consortium. J Am Acad Dermatol 2016; 74:27.
10. Trautinger F, Eder J, Assaf C, et al. European Organisation for Research and Treatment of Cancer consensus recommendations for the treatment of mycosis fungoides/Sézary syndrome - Update 2017. Eur J Cancer 2017; 77:57.
11. Kim YH, Martinez G, Varghese A, Hoppe RT. Topical nitrogen mustard in the management of mycosis fungoides: update of the Stanford experience. Arch Dermatol 2003; 139:165.

BLASTIC PLASMACYTOID DENDROCYTIC CELL NEOPLASM

Case No. 39

Presenter: Henry Ho, DO
Clay J. Cockerell, MD
Dallas, TX

History: This is a 76 year old male who is being seen for a chief complaint of skin lesions. The lesions are irregular, new, and not healing and mild in severity. The lesions have been present for months.

Physical Examination: Papules located on the right lateral inferior shoulder

Laboratory Data: Patient had a normal WBC and Hgb, but that his Platelets were low at 102. In the past, the patient has run low WBCs consistently. Renal Function and Liver have been normal.

Histopathology:
There is a superficial and deep dense atypical mononuclear cell infiltrate in the lesion. Immunohistochemical stains revealed that the majority of the cells were highlighted with CD3, CD4 and focal staining with CD5. Stains for CD20 were negative. CD123 was strongly positive.

Clinical Course: Patient was eventually diagnosed with leukemia and started on chemotherapy.

Diagnosis: Blastic plasmacytoid dendrocytic neoplasm

Points of Emphasis:

Blastic Plasmacytoid Dendrocytic Cell Neoplasm (BPDCN) has the initial presentation as asymptomatic cutaneous lesion without disseminated symptoms. Over 80% of patients present with skin lesions that can be either one or more nodules or a bruise-like area. BPDCN tends to involve multiple sites. Skin is usually the first manifestation of disease followed by the bone marrow and blood (60–90% of cases) and lymph nodes (~ 50%). Eventually skin involvement is seen in nearly all patients. BPDCN predominates in older patients (median of 65 years old) and is more likely to affect males. Thrombocytopenia is most commonly seen on laboratory evaluation. BPDCN usually is positive for CD123, CD4 and CD5. Our case demonstrated some CD3+ which may have been secondary T cell inflammation. BPDCN is commonly negative for lineage markers (CD3, CD5, CD8, etc). CD123 is a specific marker for differentiating from acute leukemia. CD123-directed therapies, such as tagraxofusp or CAR-T, useful for patients not eligible for transplant.

References:

1. Garnache-Ottou F, Feuillard J, Ferrand C, Biichle S, Trimoreau F, Seilles E, Salaun V, Garand R, Lepelley P, Maynadié M, Kuhlein E, Deconinck E, Daliphard S, Chaperot L, Beseggio L, Foisseaud V, Macintyre E, Bene MC, Saas P, Jacob MC; GOELAMS and GEIL study. Extended diagnostic criteria for plasmacytoid dendritic cell leukaemia. Br J Haematol. 2009 Jun;145(5):624-36. doi: 10.1111/j.1365-2141.2009.07679.x. Epub 2009 Apr 8. PMID: 19388928.

2. Sapienza MR, Pileri A, Derenzini E, Melle F, Motta G, Fiori S, Calleri A, Pimpinelli N, Tabanelli V, Pileri S. Blastic Plasmacytoid Dendritic Cell Neoplasm: State of the Art and Prospects. Cancers (Basel). 2019 Apr 28;11(5):595. doi: 10.3390/cancers11050595. PMID: 31035408; PMCID: PMC6562663.

MATURE PALSMACTYOID DENDRITIC PROLIFERATION ASSOCIATED WITH AML

Case No. 40 **PRESENTER:** Caroline Lee, M.D.
Betty Chung, DO
Ardenne Martin, BS, MS, L3
New Orleans, LA

History: The patient is a 77 y/o male with history of non-melanoma skin cancer (NMSC), prostate cancer s/p prostatectomy, idiopathic thrombocytopenia who initially presented with a painful red bump on the intergluteal fold. He also endorsed increasing fatigue, 10-pound weight loss, and joint pains. Within two weeks he began to develop new tender red bumps on buttock, elbows, and feet. The patient stated that any place he put pressure, he developed a red bump.

Physical Examination: firm tender erythematous subcutaneous nodule in intergluteal fold, multiple smooth, non-scaly papules and some annular plaques on elbows, buttock, toes.

Laboratory Data:

Component *Latest Ref Rng & Units*	8/8/2022
WBC *3.90 - 12.70 K/uL*	43.00 (H)
RBC *4.60 - 6.20 M/uL*	3.75 (L)
Hemoglobin *14.0 - 18.0 g/dL*	11.2 (L)
Hematocrit *40.0 - 54.0 %*	34.9 (L)
MCV *82 - 98 fL*	93
MCH *27.0 - 31.0 pg*	29.9
MCHC *32.0 - 36.0 g/dL*	32.1
RDW *11.5 - 14.5 %*	18.7 (H)
Platelets *150 - 450 K/uL*	49 (L)
MPV *9.2 - 12.9 fL*	SEE COMMENT
Immature Granulocytes *0.0 - 0.5 %*	CANCELED
Immature Grans (Abs) *0.00 - 0.04 K/uL*	CANCELED
nRBC *0 /100 WBC*	0
Gran % *38.0 - 73.0 %*	28.0 (L)

Lymph % *18.0 - 48.0 %*	13.0 (L)
Mono % *4.0 - 15.0 %*	25.0 (H)
Eosinophil % *0.0 - 8.0 %*	2.0
Basophil % *0.0 - 1.9 %*	0.0
Bands *%*	22.0
Metamyelocytes *%*	6.0
Myelocytes *%*	4.0
Platelet Estimate	Decreased (A)
Aniso	Slight
Poly	Occasional
Hypo	Occasional
Differential Method	Manual

Histopathology: The initial biopsies were interpreted as superficial and deep perivascular, periadnexal and interstitial lymphohistiocytic infiltrate and marked papillary dermal edema.

1. Skin, right elbow, punch biopsy
   -SUPERFICIAL AND DEEP PERIVASCULAR DERMATITIS, see comment
   2. Skin, right buttock, punch biopsy
   -SUPERFICIAL AND DEEP PERIVASCULAR DERMATITIS, see comment
   COMMENT: Clinical images reviewed in EPIC and differential diagnosis noted. Although the histological findings (see microscopic description) are not completely specific, lymphocytic infiltrate (Jessner), light reactions, fixed (gyrate) erythemas, drug reactions, and insect bites may have similar histologic changes. Therefore, the histological findings with support the clinical impression of deep gyrate erythema. Correlation is recommended.

When the clinical and histologic findings were contradictory, a review was requested. It noted a non-expansile infiltrate of atypical large lymphocytoid cells with open chromatin and occasional nucleoli admixed with small mature lymphocytes.

*** addendum: Skin, right elbow and right buttock, punch biopsies:
-Mature plasmacytoid dendritic cell proliferation (MPDCP) associated with acute myeloid leukemia

BMB:
BONE MARROW ASPIRATE, TOUCH PREP, CLOT, AND DECALCIFIED NEEDLE CORE BIOPSY:
LEFT POSTEROSUPERIOR ILIAC CREST -tab ACUTE MYELOID LEUKEMIA WITH MYELODYSPLASIA-RELATED CHANGES (AML-MRC)
-tab Extremely hypercellular marrow (99% total cellularity) with at least 50-60% involvement by AML and moderate-to-marked trilineage dyspoiesis with marked left-shifted granulocytic hyperplasia with marked dysgranulopoiesis, marked erythroid hypoplasia with moderate dyserythropoiesis, and megakaryocytic hyperplasia with marked dysmegakaryopoiesis with increased micromegakaryocytes
-tab Abnormal karyotype with deletion 7q: 46,XY,del(7)(q22)[20]
-tab AML Adult FISH Panel with results within normal limits
-tab POSITIVE for NPM1 mutation (0.25% = 25 NPM1/10,000 ABL1 copies)
-tab Negative for pathogenic gene alterations in CEBPA gene
-tab Mildly decreased to adequate stainable histiocytic iron stores (2-3+out of 6+)
-tab Ring sideroblasts (21%)
-tab Increased reticulin fibrosis (MF-1 with focal MF-2)
-tab PENDING: FLT3 mutational analysis and NGS; results will be reported in a separate supplemental

Clinical Course: Upon visit for suture, eruption was spreading and the patient appeared to have greater constitutional symptoms. CBC was performed and demonstrated 43,000k white cell count with circulating blasts. Bone marrow confirmed acute myeloid leukemia with myelodysplasia related changes. Upon this new finding, review of skin biopsies with appropriate stains was requested. The infiltrate was positive for CD123, TCL1A, and CD4 but negative for MPO, CD34, CD56 and Lysozyme. He is currently undergoing palliative chemotherapy with azacytidine and venetoclax.

Diagnosis: Mature Plasmacytoid Dendritic Cell Proliferation associated with Acute Myeloid Leukemia

Points of Emphasis: Plasmacytoid dendritic cells can present in skin as mature or blastic forms. Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is a rare aggressive neoplasm and can be distinguished from mature plasmacytoid dendritic cells by clinical, molecular, pathological and immunohistochemical profiles.[3] Mature plasmacytoid dendritic cell infiltrates, although not usually found in normal skin, can accumulate in viral, autoimmune, infectious and neoplastic conditions especially in the setting of chronic myelomonocytic leukemia, acute myeloid leukemia and myelodysplastic syndrome with thrombocytopenia.[1] The clinical picture of mature plasmacytoid dendritic cell infiltrates appears similar to that of psoriasis with leukemia cutis, pruritic papules or eruptions while that of BPDCN presents with purple/brown nodular lesions, or violaceous patches appearing as bruises.[1] Cutaneous lesions of mature plasmacytoid dendritic cells are CD123 positive, and targeted therapies against this marker are currently under investigation.[4] Similar infiltrates can be found in the marrow of affected patients. Unlike the lesions in BPDCN, these lesions lack CD56 expression. A clonal relationship between the leukemic cells and plasmacytoid cells has been demonstrated and may have important implications for risk-stratification and treatment.[2] These lesions appear in synchrony with developing disease or, as in this case, in conjunction with fulminant disease. Similarly, most lesions disappear spontaneously, or with steroid treatment or therapy of the underlying malignancy. This case emphasizes the importance of matching the clinical picture with the pathologic description and the refinement of a working diagnosis, particularly cases of unusual and obscure clinical pictures such as that which was presented here.

References: (At least two recent pertinent published references)

1. Machan, Salma et al. "Plasmacytoid Dendritic Cell Dermatosis Associated to Myeloproliferative/Myelodysplastic Neoplasms." *The American journal of surgical pathology*, 10.1097/PAS.0000000000001960. 25 Aug. 2022, doi:10.1097/PAS.0000000000001960
2. Zhu, Lidan et al. "Plasmacytoid Dendritic Cell Infiltration in Acute Myeloid Leukemia." *Cancer management and research* vol. 12 11411-11419. 6 Nov. 2020, doi:10.2147/CMAR.S260825
3. Dargent, Jean-Louis et al. "Cutaneous accumulation of plasmacytoid dendritic cells associated with acute myeloid leukemia: a rare condition distinct from blastic plasmacytoid dendritic cell neoplasm." *Journal of cutaneous pathology* vol. 38,11 (2011): 893-8. doi:10.1111/j.1600-0560.2011.01777.x
4. Roussel, Xavier et al. "Plasmacytoid Dendritic Cells, a Novel Target in Myeloid Neoplasms." *Cancers* vol. 14,14 3545. 21 Jul. 2022, doi:10.3390/cancers14143545

GRANULOMATOUS MYCOSIS FUNGOIDES INITIALLY SIMULATING GRANULOMATOUS PSEUDOLYMPHOMA

Case No. 41

PRESENTER: Kaycee Nguyen, BS[1]
Chris Bandel[1]
Clay Cockerell, MD[1]
Molly Warthan, MD[2]
Dallas, TX[1]
Nacogdoches, TX[2]

History: A 68-year-old female presented with irritated, firm, and moderately painful growths located on the arms and trunk associated with generalized erythroderma. The lesions had been present for months, and the growths located on the mid back were associated with cutaneous inflammation and pruritus. Review of systems revealed no problems with bleeding, healing, or scarring.

Physical Examination: Skin examination was notable for neoplasms of uncertain behavior located on the mid and left lateral back.

Histopathology: Excisional biopsies from the mid (A) and left lateral (B) back revealed different morphologies that could be part of the same process. The ‘A’ sections revealed a superficial, perivascular, somewhat band-like infiltrate of lymphocytes as well as histiocytes demonstrating a somewhat granulomatous pattern. Scattered lymphoid cells and a coincidental ruptured cyst were also present. The ‘B’ sections revealed a nodular infiltrate of histiocytes as well as abundant lymphocytes and eosinophils. Immunoperoxidase stains for CD30 were negative, and molecular genetic testing revealed a positive T-cell receptor gene rearrangement suggesting the diagnosis of granulomatous mycosis fungoides. In the context of the patient having erythroderma, that diagnosis is favored.

Diagnosis: Granulomatous mycosis fungoides simulating granulomatous pseudolymphoma

Points of Emphasis: Granulomatous dermatitis is a rash that is typified by the formation of granulomas beneath the skin. Most cases are idiopathic, but there can be an association with autoimmune conditions. Though the pathogenesis is not entirely clear, studies indicate that it may be related to immune complexes induced by associated rheumatic or autoimmune diseases, such as arthritis, arthralgia, or systemic lupus erythematosus[1, 2]. The most common manifestation of interstitial granulomatous dermatitis (IGD) is characterized by symmetrically distributed erythematous papules and plaques on the proximal inner aspects of the limbs and lateral aspects of the trunk[2]. However, there is a heterogenous clinical presentation ranging from erythematous, hyperpigmented papules and plaques to firm red-purple nodules. Lesions are usually asymptomatic but can present with slight pruritis, burning, or pain. Histopathology confirms the diagnosis, depicting dense perivascular and interstitial lymphocytic infiltrate in the reticular dermis with histiocytes, sometimes with collagen degeneration, eosinophils, and neutrophils. The focal degeneration of collagen may be surrounded by space, also known as the “floating sign”[3]. IGD is also characterized by CD68-positive epithelioid histiocytes in the reticular dermis surrounding a zone of degenerated collagen[1, 2].

A therapy of choice is not well-defined, but the prognosis of IGD is favorable, with many patients achieving spontaneous resolution within weeks to months[3]. However, relapses are possible. Due to the association with rheumatic disorders, patients should be screened for rheumatic and autoimmune diseases. Therapeutic options include topical or systemic corticosteroids, methotrexate, hydroxychloroquine, dapsone, or TNF-α inhibitors (etanercept)[2, 3]. Topical treatment is usually effective, but difficult cases may require systemic therapy.

Mycosis fungoides may assume a granulomatous histology which may cause it to simulate non-neoplastic conditions such as pseudolomphomas and infections. Here, the diagnosis was established on the basis of molecular genetic studies.

References:

1. Chua-Aguilera CJ, Möller B, Yawalkar N. Skin Manifestations of Rheumatoid Arthritis, Juvenile Idiopathic Arthritis, and Spondyloarthritides. Clin Rev Allergy Immunol. 2017;53(3):371-93.
2. Peroni A, Colato C, Schena D, Gisondi P, Girolomoni G. Interstitial granulomatous dermatitis: a distinct entity with characteristic histological and clinical pattern. Br J Dermatol. 2012;166(4):775-83.
3. Terziroli Beretta-Piccoli B, Mainetti C, Peeters MA, Laffitte E. Cutaneous Granulomatosis: a Comprehensive Review. Clin Rev Allergy Immunol. 2018;54(1):131-46.

EXTRANODAL NK/T-CELL LYMPHOMA, NASAL TYPE

Case No. 42 **PRESENTER:** Ian Watson, MD
Sarah Fillingim, BS
Bing Han, MBBS
Howard Ragland, MD
New Orleans, LA

History:
A 47 year-old male with a past medical history of hypertension, hyperlipidemia, and 30 pack-year smoking history was transferred from outside hospital for higher level of care of a 3-month history of progressive dysphagia, odynophagia, and nasal obstruction. One month prior to admission, the patient developed a progressive, pruritic eruption to the face and scalp. On arrival, he was febrile and tachycardic. Review of systems was positive for fever, chills, weight loss, night sweats. The patient denied facial pain, difficulty breathing, and personal or family history of cancers of the head and neck. Patient endorses history of travel to South East Asia while serving in the military.

Physical Examination:
Gen: Ill-appearing
Skin: Lightly erythematous indurated, papules and plaques to the bilateral temples, cheeks and beard region
Lymph: Bilateral cervical basin adenopathy

Laboratory Data:
CBC and CMP were within normal limits. Treponema pallidum antibody, HIV, acute hepatitis, tuberculosis, histoplasma, coccidiodes and paracoccidioides assays were unremarkable.

Histopathology:
A punch biopsy of a forehead lesion was significant for atypical dermal lymphoid infiltrate, composed of medium-sized lymphocytes with irregular nuclei, vesicular chromatin and conspicuous nucleoli in a background of ulceration, necrosis and mixed inflammation. The lymphocytes were highlighted by CD3, CD7, CD30, CD56 and EBER in-situ hybridization stains. A Ki-67 proliferative index was approximately 15%.

Diagnosis:
Extranodal NK/T-cell Lymphoma, Nasal Type

Clinical Course:
ENT was consulted for biopsy of a palatal lesion which demonstrated similar immunohistochemical and histologic features as skin biopsy. CT chest during admission demonstrated bilateral pleural effusion and nodular infiltrates throughout the lungs. Thoracentesis demonstrated malignant cells, and pulmonary nodules were too small to biopsy. The patient was initiated on radiation/chemotherapy inpatient and discharged with outpatient follow up.

Points of Emphasis:

Extranodal NK/T-cell Lymphoma (ENKL), Nasal Type is associated with Ebstein-Barr Virus (EBV) and comprises between 2% and 10% of non-Hodgkins Lymphoma cases in North America[1,2]. It is more common in patients of East Asian descent. Median age at presentation is approximately 53 years, with male predominance. Early-stage disease comprises the majority new cases, at approximately 58 percent[2].

ENKL typically involves the nasopharynx, as well as the upper respiratory and digestive tracts. It is not uncommon for this condition to present with tumor erosion through the hard palate[2]. Its clinical course is markedly aggressive, with metastases most commonly occurring to the skin and subcutaneous tissues[1]. Prompt diagnosis is important for this condition, as its effective treatment differs from that of standard lymphoma regimens[2].

Staging for ENKL serves to distinguish between local (stage I and contiguous stage II) and advanced disease (non-contiguous stage IIE to stage IV, and all non-nasal forms). Prognosis is best for patients presenting with isolated skin lesions (median survival of 27 months), and significantly worsens with extracutaneous involvement (median survival of 4 months) [1]. Early stages are classically treated with either sequential or concurrent chemotherapy and radiation. Standard treatment for advanced disease involves asparginase-containing chemotherapy regimens, with optional addition of radiation therapy or autologous stem-cell transplant[2].

References:

1. Geller S, Myskowski PL, Pulitzer M. NK/T-cell lymphoma, nasal type, γδ T-cell lymphoma, and CD8-positive epidermotropic T-cell lymphoma-clinical and histopathologic features, differential diagnosis, and treatment. Semin Cutan Med Surg. 2018;37(1):30-38. doi:10.12788/j.sder.2018.020

2. Allen PB, Lechowicz MJ. Management of NK/T-Cell Lymphoma, Nasal Type. J Oncol Pract. 2019;15(10):513-520. doi:10.1200/JOP.18.00719

UNUSUAL LYMPHOMATOID PAPULOSIS WITH PLASMA CELLS

Case No. 43

PRESENTER: Jason Klein, MD, PhD
Travis Vandergriff, MD
Clay Cockerell, MD
Dallas, TX

History: 31 year old, otherwise healthy, male presents to clinic for "red spots" present for seven months. He reports that the lesions start as "scabs," some with pus, and while he denies any symptoms, reports that he inadvertently excoriates them. He reports that the rash worsened about five months ago. He was seen by an outside dermatologist, who performed a biopsy to rule out psoriasis vs erythema multiforme vs linear IgA bullous dermatosis. He was started on betamethasone and a short course of prednisone. Patient reports that the oral and topical corticosteroids did not provide much relief although he has been developing fewer new lesions since that time. His most recent lesion appeared approximately 2 weeks before presentation. He is not on any medications but takes glutamine, creatine hcl, omega3, probiotics, and a multivitamin. He reports that he started all of these supplements about one month after onset of symptoms.

Physical Examination: Well appearing young male, muscular build, in no acute distress. On the dorsal hands and inner thighs moreso than the trunk are several red-brown non-blanchable papules. On the left forearm is a 1.0x0.6cm red papule with a collarette of scale. Papule is firm with no fluctuance or drainage.

Laboratory Data: The patient competes in CrossFit. He was recently taking Creatinine supplements and had a creatine of 1.63mg/dL. This resolved after the patient discontinued supplements. ANA, RPR, and HIV testing was negative.

Histopathology: Initial read: Mixed dermal infiltrate with plasma cells. These are not the features of any psoriasiform process or an immunobullous disease. An infectious process, possibly a spirochetal one, could give this pattern. PAS and Fite stains are negative for microorganisms. Immunohistochemical stain for *Treponema pallidum* is negative. Control slides are stained appropriately.
Re-read with new clinical information: CD30-positive lymphoid infiltrate. The epidermis is ulcerated with overlying scale. In the dermis, lymphocytes and histiocytes are present in a wedge shaped pattern. Many of the lymphoid cells are somewhat enlarged hyperchromatic, and irregular in outline. There are admixed neutrophils. The larger lymphoid cells express CD4 and CD30, with some but not all also expressing CD3. CD20, and CD8 highlight background lymphocytes.

Clinical Course: Patient discontinued betamethasone and was started on lidex cream for spot treatment.

Diagnosis: Pseudolymphoma. Favor LyP vs pseudolymphomatous drug eruption secondary to supplement.

Points of Emphasis: The mixed dermal infiltrate showed abundant plasma cells, which originally rose concern for an infectious etiology, including syphilis. While uncommon in LyP, plasma cells have been reported in one case report[1]. They occur more frequently in pseudolymphomatous drug eruption, which can be differentiated as T cells are scattered as opposed to being located in clusters or sheets[2]. This case also highlights the importance of clinicopathologic correlation as the clinical image and additional history helped to determine the diagnosis.

References:

1. Serra-Guillen C, Requena C, Alfaro A, *et al.* Oral involvement in lymphomatoid papulosis. *Actas Dermosifiliogr* 2007;98;4;265-7.
2. Swamy MR, Pollock S, Goldberg LJ, Shen L. A case of lymphomatoid papulosis type E in a young adult: An uncommon entity. *Journal of Cutaneous Pathology* 2021;48;694-700.

LANGERHANS CELL HISTIOCYTOSIS ASSOCIATED WITH JAK2-MUTATION RELATED PRIMARY MYELOFIBROSIS TREATED WITH RUXOLITINIB

Case No. 44

Presenters: Aditya Sood, MS4
Keith Pennycook, DO
Felicity Warren, MD
Kristopher McKay, MD
Dipti Anand, MD
Atlanta, GA

History: An 82-year-old Caucasian male with history of JAK2 mutated primary myeloproliferative neoplasm, currently on Ruxolitinib 10 mg twice daily since February of 2018, presented with a chief complaint of cutaneous eruption.

Physical Exam: Physical exam revealed tender, coalescing, erythematous vesicles and erosions in the left groin, posterior helix and shoulders. KOH stain was negative for fungus. Shave biopsy of the lesion from the left groin was performed.

Laboratory Data:
Chemistry, renal, and liver labs were within normal limits. LDH was minimally elevated at 319. White count was 14,800 WBCs/ mcL with a normal differential. Patient was mildly anemic, with a hemoglobin 10.7g per DL, hematocrit 35.3 % and platelets at 354,000/mcL.

Histopathology:
Histology showed epidermal and papillary dermal infiltration of histiocytoid cells with scattered eosinophils. Some cells had convoluted “horseshoe” shaped nuclei with nuclear grooves.

Immunohistochemical evaluation showed the cells to be diffusely positive for CD45 and CD1A. No significant expression of CD163, CD123, CD117, CD34, myeloperoxidase, CD3, CD20, CD30, CD68 or CD56, was seen. EBV in situ hybridization study was negative.

The histology and staining profile was consistent with Langerhans cell histiocytosis.

Clinical Course: Patient was recommended to continue Ruxolitinib treatment in the setting of resolving LCH, with close monitoring by dermatology.

Diagnosis: Langerhans Cell Histiocytosis

Points of Emphasis:
Langerhans cell histiocytosis, a neoplastic proliferation of myeloid precursors that differentiate into Langerhans cells, may present focally at a single site or as a more disseminated disease with multiorgan involvement.

LCH can occur in association with other hematologic disorders including myeloproliferative neoplasms. Approximately half of patients with myeloproliferative neoplasms have the JAK2 activation mutation. The prevalence of JAK2 activation mutation in myeloproliferative neoplasms makes this entity more likely to be clinically susceptible to Ruxolitinib, a tyrosine kinase JAK inhibitor.

Our patient with a diagnosis of myeloproliferative neoplasm being treated with Ruxolitinib was found to have LCH. While LCH has previously been reported associated with other hematologic disorders, little exists in the literature exploring the association/induction of LCH in the setting of Ruxolitinib treatment.

The most common genetic event seen in Langerhans cell histiocytosis, reported in approximately 57% of cases, is the BRAFV600E mutation. A subset of patients with LCH also exhibit JAK2 mutations. JAK2 mutated LCH is derived from the same mutated, neoplastic progenitor cell that causes myeloproliferative neoplasm. When a myeloproliferative disorder is treated with a JAK inhibitor such as Ruxolitinib, the medication may iatrogenically shift the terminal differentiation of the myeloproliferative cells, forcing the neoplastic progenitor cells in the bone marrow to undergo divergent differentiation towards the cutaneotropic Langerhans cells. We hypothesize that our patient's variant of myeloproliferative neoplasm had a JAK2 V617F mutation, presumably identical to the neoplastic cells in the patient's bone marrow.

References:

1. Bonometti A, Bagnoli F, Fanoni D, et al. JAK2-mutated Langerhans cell histiocytosis associated with primary myelofibrosis treated with ruxolitinib. *Hum Pathol*. 2018;73:171-175. doi:10.1016/j.humpath.2017.10.017

2. Holst JM, Enemark MB, Plesner TL, Pedersen MB, Ludvigsen M, d'Amore F. Coexisting BRAF-Mutated Langerhans Cell Histiocytosis and Primary Myelofibrosis with Shared JAK2 Mutation. *Case Rep Hematol*. 2021;2021:6623706. doi:10.1155/2021/6623706

PRIMARY CUTANEOUS ACRAL CD8+ T-CELL LYMPHOPROLIFERATIVE DISORDER

Case No. 45 **PRESENTERS:** Katherine Edwards, MD
Aleena Hajek, BS
Henry Lim, MD
Ben Friedman, MD
Detroit, MI

History:
A 47-year-old female presented with six months of asymptomatic red bumps on the nose. She denied rash elsewhere except some mild redness of the cheeks. She was initially treated at an outside dermatologist for presumed rosacea with doxycycline, metronidazole 0.75% cream, and alclometasone 0.05% cream without improvement. Biopsy was performed at follow up visit with an outside dermatologist which showed "atypical dermal lymphoid infiltrate compatible with indolent CD8+ lymphoid proliferation of the face." She was then treated with mometasone 0.1% cream once daily as well as intralesional Kenalog (5.0 mg/mL) to several lesions on the nose with improvement but not resolution.

Physical Examination:
The left nasal tip and left nasal ala have several small erythematous smooth papules. Cutaneous examination is otherwise benign.

Laboratory Data:
CBC/CMP/LDH: within normal limits
Sezary cells: negative
Peripheral blood T-cell gene rearrangement: no clonal gene rearrangement detected
CD4/CD8 ratio: 3.6

Histopathology:
Punch biopsy from the nose revealed a dense dermal infiltrate of small to medium sized lymphocytes with a prominent Grenz zone. The lymphocytes stained positive for CD3, CD5, CD7, CD8, and Tia-1 and were negative for CD4. A Mib-1 stain revealed a low proliferation index of approximately 10-20%. A T cell receptor gene rearrangement assay revealed a dominant clonal population of T cells.

Clinical Course:
With serial intralesional triamcinolone injections, the lesions have nearly resolved. Counseling regarding photoprotection with a hat, sunscreen, and Heliocare 240 mg twice daily was provided. If her lesions fail to improve or worsen, localized radiation may be pursued.

Diagnosis:
Primary Cutaneous Acral Cd8+ T-Cell Lymphoproliferative Disorder

Points of Emphasis:
Cutaneous T-cell lymphomas (CTCL) are a heterogenous group of non-Hodgkin lymphomas that consist of a monoclonal proliferation of T cells in the skin or mucosal sites. Mycosis fungoides and Sezary syndrome are the most commonly recognized and comprise 60% of CTCL. Other CTCLs such as lymphomatoid papulosis, primary cutaneous anaplastic large cell lymphoma, and primary cutaneous CD30 lymphoproliferative disorders comprise an additional 30%. The

remaining 10% of CTCL includes rare disorders that are heterogenous in clinical presentation, histology, and course. Primary cutaneous acral CD8+ T-cell lymphoproliferative disorder falls in the latter group.[1]

Of note, the 5th edition of the World Health Organization Classification of Haematolymphoid Tumours released nomenclature changes in July of 2022 renaming primary cutaneous acral CD8+ T-cell lymphoma to primary cutaneous acral CD8+ T-cell lymphoproliferative disorder.[2] In May 2022, Kempf et al. proposed the classification for dermal CD8+ lymphoproliferations as following: (i) cutaneous acral CD8+ T-cell lymphoma; (ii) primary cutaneous PTL, unspecified, with a CD8+ phenotype (NOS); and (iii) cutaneous CD8+ lymphoproliferations associated with either congenital or acquired immunodeficiency conditions.[3]

Primary cutaneous acral CD8+ T-cell lymphoproliferative disorder (CD8+ ATCL) most commonly presents with a single papule/nodule on an acral surface, most often the ear, in adults over 50 and follows an indolent course. There is a 3:1 male predominance.[3]

On histology, there is a diffuse dermal monotonous infiltrate in 58% of cases and a nodular infiltrate in 42%. The cells are bland and small to medium sized with irregular nuclei and little cytoplasm. The Grenz zone is apparent in 42%. Both epidermotropism and folliculotropism is absent in 94% of cases. There is moderate nuclear pleomorphism in 87%. Ulceration, necrosis, angiocentricity, and mitoses are rare. Tumor cells reveal CD8 expression (100%) on immunohistochemical analysis with loss of T-cell markers (CD2, CD5, CD7) in 81% of cases. In addition, tumor cells are often positive for CD31, CD42, CD81, CD302, as well as CD681 which forms a dot-like pattern. EBV is negative and there is a low proliferation index of Ki-67 which helps to differentiate from more aggressive subtypes. There has been report of co-expression of CD4 and CD8 but has not been observed in most recent reports. Monoclonal T-cell gene rearrangements were present in 100% of cases. However, in the real world, features on histology and immunohistochemical analysis quickly lead to the correct diagnosis, making TCR analysis not necessary for diagnosis.[3]

Treatment includes surgical excision, radiotherapy, and topical or intralesional corticosteroids. Relapse rates are generally low, and complete remission has been seen in 80% of study population (Kempf et al). CD8+ ATCL has an indolent course with an excellent prognosis, with only one published case demonstrating locally aggressive behavior.[3]

References:

1. Stoll, J. R., Willner, J., Oh, Y., Pulitzer, M., Moskowitz, A., Horwitz, S., Myskowski, P., & Noor, S. J. (2021). Primary cutaneous T-cell lymphomas other than mycosis fungoides and Sézary syndrome. Part I: Clinical and histologic features and diagnosis. *Journal of the American Academy of Dermatology*, *85*(5), 1073–1090.
2. Alaggio, R., Amador, C., Anagnostopoulos, I., Attygalle, A. D., Araujo, I. B. de O., Berti, E., Bhagat, G., Borges, A. M., Boyer, D., Calaminici, M., Chadburn, A., Chan, J. K. C., Cheuk, W., Chng, W.-J., Choi, J. K., Chuang, S.-S., Coupland, S. E., Czader, M., Dave, S. S., … Xiao, W. (2022). The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Lymphoid Neoplasms. *Leukemia*, *36*(7), 1720–1748.
3. Kempf, W., Petrella, T., Willemze, R., Jansen, P., Berti, E., Santucci, M., Geissinger, E., Cerroni, L., Maubec, E., Battistella, M., Goodlad, J., Guenova, E., Lappalainen, K., Ranki, A., Craig, P., Calonje, E., Martin, B., Whittaker, S., Oschlies, I., … Robson, A. (2022). Clinical, histopathological and prognostic features of primary cutaneous acral CD8 $^{+}$ T-cell lymphoma and

other dermal CD8 $^{+}$ cutaneous lymphoproliferations: Results of an EORTC Cutaneous Lymphoma Group workshop*. *British Journal of Dermatology*, *186*(5), 887–897.

PLASMACYTOMA

Case No. 46

PRESENTER: Kezia Surjanto, BS
Ashley Allen, MD
Bing Han, MD
Alun Wang, MD
Carole Bitar, MD
New Orleans, LA

History: A 61-year-old female with a history of multiple myeloma presented to our dermatology clinic for new lesions on the scalp, left eyebrow, and right ankle. She was on lenalidomide maintenance therapy status post stem cell transplant one year prior to the appearance of the lesions. The patient denied pain, pruritus, or bleeding, but reported spontaneous changes in the size of the lesions.

Physical Examination: 8 mm mobile, subcutaneous nodule to the left eyebrow and a 1 cm well-circumscribed, mobile, subcutaneous nodule to the occipital scalp. The patient also had a 1.6 cm brightly erythematous, indurated nodule to the right lateral ankle (Figure 1), with two similar nodules to the right posterior lower leg.

Laboratory Data: Her most recent serum protein electrophoresis was notable for an M-spike of 0.4 g/dL.

Histopathology: A punch biopsy of the mass on the right ankle showed a grenz zone with an underlying diffuse and interstitial infiltrate of atypical plasma and plasmacytoid cells that demonstrated nuclear pleomorphism and relatively abundant cytoplasm (Figure 2, 3). The atypical cells were diffusely positive for CD138 and showed lambda restriction (Figure 4, 6).

Clinical Course: She was treated for relapsed multiple myeloma with daratumumab, carfilzomib, and dexamethasone therapy. She is undergoing close follow-up with her oncologist.

Diagnosis: Plasmacytoma

Points of Emphasis:

Extramedullary plasmacytomas (EMPs) result from clonal proliferation of plasma cells[1]. They can be primary with no systemic involvement or secondary, which arises in the setting of multiple myeloma[2]. Though EMPs typically arise in the upper aerodigestive tract, they can also arise in the skin as cutaneous extramedullary plasmacytomas (cEMPs)[1, 2]. It is important to note that skin findings (i.e. cEMPs) in the setting of multiple myeloma are rare[2, 3]. Patients typically present with erythematous to violaceous papules, nodules, or plaques on the head, trunk, and extremities[1, 3]. Some lesions can ulcerate, and others can be tender[1, 3].

Plasma cell neoplasms, reactive processes, plasmablastic lymphomas, and B-cell neoplasms with plasmacytic differentiation display plasma cell proliferation[2]. Plasma cells have characteristic cytology on hematoxylin and eosin stains, however, due to lack of differentiation in neoplastic processes they can be hard to recognize[2]. Thus, it is imperative to obtain CD138 immunohistochemistry, as plasma cells stain strongly for this marker. In contrast to B cell neoplasms, plasma cell neoplasms are typically negative for CD19 and CD20[3]. The presence of kappa and lambda light chain restriction in plasma cell neoplasms can help differentiate these clonal proliferations from reactive processes[2].

On histology, atypical plasma cells in plasmacytomas are either nodular and diffuse or interstitial, often invading the entire dermis[3]. Patients with underlying multiple myeloma tend to experience a fluctuating clinical course, often with frequent relapses and progression of cEMPs[1]. Therapy for plasmacytomas includes multiagent chemotherapy, radiation therapy, or stem cell transplantation[1, 4]. Unfortunately, there is a survival rate of approximately one year after the appearance of cutaneous lesions[3, 4]. This case of cEMP in the setting of multiple myeloma is an example of a rare diagnosis that stresses the importance of early detection to guide proper management.

References:

1. Comfere NI, Gonzalez Santiago TM, Peters MS, Knudson RA, Ketterling RP, Gibson LE. Cutaneous extramedullary plasmacytoma: clinical, prognostic, and interphase cytogenetic analysis. The American Journal of Dermatopathology. 2013;35(3):357-363.
2. Patterson JW, Parsons JM, White RM, Fitzpatrick JE, Kohout-Dutz E. Cutaneous involvement of multiple myeloma and extramedullary plasmacytoma. Journal of the American Academy of Dermatology. 1988;19(5):879-890.
3. Malysz J, Talamo G, Zhu J, et al. Cutaneous involvement in multiple myeloma (Mm): A case series with clinicopathologic correlation. Journal of the American Academy of Dermatology. 2016;74(5):878-884.
4. Jurczyszyn A, Olszewska-Szopa M, Hungria V, et al. Cutaneous involvement in multiple myeloma: a multi-institutional retrospective study of 53 patients. Leukemia & Lymphoma. 2016;57(9):2071-2076.

CUTANEOUS ENDOMETRIOSIS

Case No. 47

PRESENTER: Angela Yen Moore, MD
Kara Hurley, MS4
Arlington, TX
Fort Worth, TX

History:
A 42-year-old multiparous woman presented with a 6-year history of a painful, enlarging, umbilical nodule. She reported swelling of the nodule in a cyclical manner every 3-4 months, associated with intense pain but no bleeding or discharge. After episodes of dysmenorrhea, the patient had a history of an endoscopic endometrial ablation for endometriosis 7 years prior to presentation but had no subsequent gynecological examinations. Both of her two children were delivered vaginally, and she had no history of abdominopelvic surgery.

Physical Examination:
Firm, darkly pigmented 2.2 cm umbilical nodule.

Laboratory Data: N/A

Histopathology:
Biopsy showed an acanthotic epidermis overlying ectatic glands lined by columnar-type epithelium and surrounded by endometrial-type stroma and hemosiderin-laden macrophages.

Clinical Course:
The nodule was removed by complete excision, and she was referred for gynecological examination to rule out other manifestations of endometriosis. There is no evidence of recurrence at two years.

Diagnosis:
Cutaneous endometriosis

Points of Emphasis:
In a literature review, 61 published English studies of primary umbilical endometriosis were found between 2000 and 2020. Since endometriosis affects approximately 10% of women of child-bearing age, primary cutaneous endometriosis should be included in the differential diagnosis of an umbilical nodule in women. While rare, correct diagnosis is critical given the potential for malignant transformation.

References:
1. Kyamidis K, Lora V, Kanitakis J. Spontaneous cutaneous umbilical endometriosis: report of a new case with immunohistochemical study and literature review. Dermatol Online J. 2011;17(7):5. Published 2011 Jul 15.
2. Loh SH, Lew BL, Sim WY. Primary Cutaneous Endometriosis of Umbilicus. Ann Dermatol. 2017;29(5):621-625. doi:10.5021/ad.2017.29.5.621

PROLIFERATING PILOMATRICOMA

Case No. 48 **PRESENTER:** Zach Thornton BA[1]
Long Ly MD[2]
Andrea Murina, MD[2]
Louisville, KY[1]
New Orleans, LA[2]

History: A 47-year-old man with a history of basal cell carcinoma presented with a new lesion on his right chest that he first noticed 10 weeks prior. The lesion had been growing rapidly and was associated with some tenderness. He had attempted to squeeze the lesions which resulted in overlying bruising. He denies any history of bleeding or drainage from lesion.

Physical Examination: Skin exam notable for a 2 cm hard but mobile subcutaneous nodule located on the right chest. The nodule exhibited a bilobulated architecture on palpation with some overlying ecchymosis.

Laboratory Data: No associated laboratory findings.

Histopathology: Histopathology showed a proliferation of basaloid keratinocytes in the skin forming a well-circumscribed nodule, keratin fragments with "shadow cell" morphology, and chronic inflammation. Increased mitoses were identified. There was no infiltrating growth pattern, and no atypical mitosis was present.

Clinical Course:
At the time of presentation, a 4 mm punch biopsy was performed. The lesion demonstrated histopathologic features consistent with a proliferating pilomatricoma. At two-week follow-up after the biopsy, the patient reported that the lesion had continued to grow. Plans were made for full excision of the lesion with margins.

Diagnosis: Proliferating Pilomatricoma

Points of Emphasis: Pilomatricoma is a benign tumor derived from hair matrix cells. Proliferating pilomatricoma is a rare variant first described by Kaddu et al. (1997) after noting unique histological architecture in several pilomatricomas. These features include cystic lobules of extensive basaloid cells in association with small and large foci of shadow cells. [1] This varies from the classic pilomatricoma which exhibits large amounts of eosinophilic material and shadow cells with only a small zone of basaloid cells around the periphery, maintaining a cystic character. [2] Proliferating pilomatricomas are most commonly seen in the elderly on the head and neck and range from 1.5 cm to 5.5 cm. [1]

Although exhibiting benign architecture histologically, proliferating pilomatricomas have been reported to recur locally after excision, in some cases leading to significant patient morbidity. [3] Care must also be given to distinguish proliferating pilomatricoma from pilomatrical carcinoma. Pilomatricomas may rarely transform into pilomatrical carcinomas, suggesting a theoretical risk of malignant transformation of proliferating pilomatricomas. [4] For this reason, excision with monitoring for recurrence is the treatment of choice. [1]

References:
1. Kaddu S, Soyer HP, Wolf IH, Kerl H. Proliferating pilomatricoma. *Journal of Cutaneous Pathology*. 1997; 24(4):228-234.

2. Elder DE, Massi D, Scolyer RA, Willemze R, International Agency for Research on Cancer. *WHO Classification of Skin Tumours*. 4th edition. International Agency for Research on Cancer; 2018; 153-155.
3. Miljanic M, Aung Y, Patel R, et al. Recurrent giant back proliferating pilomatricoma leading to significant patient morbidity – a case report. *International Journal of Dermatology*. 2022;61(8): 286-288.
4. Kondo RN, Pontello Junior R, Belinetti FM, Cilião C, Vasconcellos VRB, Grimaldi DM. Proliferating pilomatricoma - Case report. *An Bras Dermatol*. 2015;90(3): 94-96.

CUTANEOUS COCCIDIOIDOMYCOSIS

Case No. 49

PRESENTER: Jason Dominguez, PA
Robert Chappell, MD
Carlos Ricotti, MD
Odessa, TX
Miami, FL

History: 58-year-old male with a past medical history significant for liver cirrhosis (s/p liver shunt) presents with a chief complaint of a large lesion on the right ear for the past 1 month. Patient states that the lesion started as a small red papule that slowly enlarged to the present size and believes that the lesion is enlarging. He admits to associated symptoms including pruritus and tinnitus. The patient denies fever, chills, pain, headaches, or neuromuscular deficits.

Physical Examination: Dusky red plaque on the right ear with overlying scale and yellow & red crust. Palpable cervical lymph node detected.

Laboratory Data: CXR unremarkable. Coccidioides detected by PCR.

Histopathology: Pseudoepitheliomatous hyperplasia. Mixed dermal inflammatory infiltrate with lymphocytes, histiocytes, neutrophils, and eosinophils. Isolated spherules that contain endospores.

Clinical Course:
Started on Fluconazole 800mg a day for a total of 6 months. Still on medication, but lesions are starting to resolve when he was seen at last follow up.

Diagnosis: Cutaneous Coccidioidomycosis

Points of Emphasis:

- It may be difficult to distinguish a disseminated infection from a primary cutaneous infection if pulmonary symptoms are minimal or absent.
- A history of localized trauma to the affected area suggests primary inoculation, but it does not rule out disseminated disease. This is due to locus minoris resistentae: a phenomenon in which disseminated organisms in the blood stream may specifically localize to the site of injury.
- There are no specific tests to differentiate primary cutaneous vs disseminated disease. Clues that support the possibility of primary cutaneous infection are regional lymphadenopathy and a relatively low complement fixation titer.
- Topical treatment is not useful in primary or secondary cutaneous coccidiomycosis.
- Fluconazole 400-800mg QD or itraconazole 200mg BID for 6-12 months is the gold standard set forth by the IDSA.

References:

1. DiCaudo DJ. Coccidioidomycosis: a review and update. J Am Acad Dermatol. 2006 Dec;55(6):929-42; quiz 943-5. doi: 10.1016/j.jaad.2006.04.039. PMID: 17110216.

2. Reyna-Rodríguez IL, Ocampo-Candiani J, Chavez-Alvarez S. Primary Cutaneous Coccidioidomycosis: An Update. Am J Clin Dermatol. 2020 Oct;21(5):681-696. doi: 10.1007/s40257-020-00525-z. PMID: 32557380.

ERYTHRASMA

Case No. 50 **PRESENTER:** Manjot Mashiana, DO

Gary Cox, MD
Clay Cockerell, MD
Dallas, TX
Victoria, TX

History: This is a 69-year-old female being seen for complaint of rash, located on axillae, under breast, lower abdomen, and groin/inner thighs. The rash was flaking, itchy, and moderate in severity. It was present for 3 months. Pertinent negatives included: no sore throat and no joint aches. The medication at the time was nystatin-triamcinolone, but it did not help.

Patient's medical history includes hypertension and hypercholesterolemia. Surgical history involves stents in heart and breast reduction. She was also on blood thinners.

Physical Examination: Plaques located on right axillary vault, groin/inner thighs, lower abdomen, and under breast.

Laboratory Data: KOH negative

Histopathology: There is epidermal hyperplasia with hyperkeratosis and numerous filamentous bacteria in the cornified layer.

Clinical Course: Patient was to cleanse with hibiclens and start lotrisone twice a day for two weeks. She returned to clinic one week later to follow up, presenting with pink/brown patches in intertriginous areas with no epidermal changes. The rash was looking better and getting lighter in color. Patient even reported feeling better and no longer itching. As pathology revealed erythrasma, treatment plan was updated to continue using hibiclens every other day, discontinue lotrisone cream, and use clindamycin solution twice daily for 3 weeks on affected areas.

Diagnosis: Erythrasma

Points of Emphasis:
Erythrasma is an infection of the interdigital and intertriginous body parts caused by Corynebacterium minutissimum - a gram positive coccobacilli, catalase positive, non-spore forming organism that fluoresces coral-red on Wood light exam due to coproporphyrin III produced. Histopathologically, hyperkeratosis with lymphohistiocytic infiltrate is seen around the vascular structures in the stratum corneum.

There are plenty to consider in the differential diagnoses. Candidiasis is negative for fluorescence and pseudohyphae are observed with KOH preparation. Dermatophyte infections reveal septate hyphae in the corneum in KOH preparation and may have green fluorescence to them if infected with Microsporum. Pityriasis versicolor appears yellow-gold on Wood lamp fluorescence and on histopathology, hyphae and small spores are visible in the stratum corneum. Terra firma-forme dermatosis, negative on Wood lamp and KOH examination, has hyperpigmentation that is easily removed via 70% isopropyl alcohol. And lastly, there are reports of high prevalence of erythrasma in patients with inverse psoriasis.

Erythrasma causes itching, scaling, and erythema thus treatment therapies compromise of topical and oral options. Topical therapeutics, preferred over oral, include 2% clindamycin solution and 2% erythromycin solution. Oral therapeutics, reserved for extensive erythrasma, include clarithromycin as a one-time dose or erythromycin as a 14-day course. Despite treatment options readily available, erythrasma can still reoccur if triggering factors are not removed. In immunocompetent individuals, outcomes are excellent. However, it is important to note complications can occur, secondary to infection, in immunocompromised individuals, such as endocarditis, abscess formation, intravascular catheter infection, cellulitis, and pyelonephritis.

References:

1. Dunn C, Applebaum DS, Dao H. Widespread hyperpigmented rash present for 1 year. JAAD Case Rep. 2018 Sep;4(8):743-745.
2. Torres-Navarro I. Erythrasma. 2018 AgoEmergencias. 30(4):283.
3. Janeczek M, Kozel Z, Bhasin R, Tao J, Eilers D, Swan J. High Prevalence of Erythrasma in Patients with Inverse Psoriasis: A Cross-sectional Study. J Clin Aesthet Dermatol. 2020 Mar;13(3):12-14. Epub 2020 Mar 1. PMID: 32308789; PMCID: PMC7159311.
4. Forouzan P, Cohen P R (September 30, 2020) Erythrasma Revisited: Diagnosis, Differential Diagnoses, and Comprehensive Review of Treatment. Cureus 12(9): e10733. doi:10.7759/cureus.10733.

PITTED KERATOLYSIS

Case No. 51 **PRESENTER:** Christopher Wong, DO
Stephen E. Weis, DO
Clay J. Cockerell, MD, MBA
Ft. Worth, TX
Dallas, TX

History: A 36-year-old female with no significant medical history presented with a 20-year history of a rash on her left 3rd toe and ball of foot. It started on the ball of her foot and progressed to involve her toe. There is no bleeding, itching, or pain. Long showers and soaking in pools make the rash worse, and she notices a foul odor after prolonged immersion of the foot in water. She has been treated with topical steroids, cryotherapy, skin scrapings, and fungal creams without improvement. She also complains of hyperhidrosis of her feet.

Physical Examination: Overlying the plantar surface of the left 3rd toe and metatarsal foot, there is scaling, fissuring, and pitting within well-demarcated flesh-colored hyperkeratotic papules coalescing into plaques. The normal dermatoglyphics are disrupted. After submerging the left foot in water for ten minutes, the pits are enlarged and the fissuring is more pronounced.

Histopathology: Shave biopsies of the left 3rd metatarsal and plantar toe sent for routine histology demonstrated small dells on the surface of the cornified layer. Numerous filamentous branching bacteria within the dells are recognizable as *Corynebacterium* spp.

Clinical Course: The patient was treated with several different topical antibiotic therapies over the course of several months, including clindamycin, erythromycin, mupirocin, benzoyl peroxide, and chlorhexidine. She also underwent a course of doxycycline 100 mg twice daily for two weeks. These have resulted in no appreciable improvement. She is currently applying topical chlorhexidine daily, topical benzoyl peroxide nightly, and topical urea 40% cream twice daily. She is additionally undergoing curettage of the corneal layer monthly. Her coexisting hyperhidrosis is adequately treated with topical glycopyrrolate wipes. The case is being presented for additional treatment recommendations.

Diagnosis: Pitted keratolysis

Points of Emphasis: Pitted keratolysis results from bacterial infection of the stratum corneum resulting in discrete superficial pits and erosions of palmoplantar skin. Malodor and hyperhidrosis often accompany cutaneous findings. While *Corynebacterium* spp. and *Kytococcus sedentarius* are common etiologic pathogens, other bacterial species have been implicated. A recent cross-sectional analysis showed that pitted keratolysis may involve the interface skin between toes, web spaces, nonglabrous skin, and paronychial skin with resultant nail changes. Notably, the histologic presence of bacteria at the base of pits has been associated with worse treatment outcomes. Many topical antibacterial therapies (eg, benzoyl peroxide, clindamycin, erythromycin, mupirocin, etc.) have shown to cure pitted keratolysis within several weeks. Along with treating the infectious etiology, management should include reducing moisture and improving hygiene. Patients should be encouraged to wash and dry their feet daily, wear clean and breathable socks, and avoid occlusive footwear.

References:

1. Makhecha M, Dass S, Singh T, Gandhi R, Yadav T, Rathod D. Pitted keratolysis - a study of various clinical manifestations. *Int J Dermatol*. 2017;56(11):1154-1160. doi:10.1111/ijd.13744
2. Maxwell J, Lam JM. Multiple malodorous pitted craters over the feet: Pitted keratolysis. *Paediatr Child Health*. 2021;26(7):390-391. Published 2021 Aug 23. doi:10.1093/pch/pxab052
3. Pattanaprichakul P, Kulthanan K, Bunyaratavej S, et al. The Correlations between Clinical Features, Dermoscopic and Histopathological Findings, and Treatment Outcomes of Patients with Pitted Keratolysis. *Biomed Res Int*. 2021;2021:3416643. Published 2021 Oct 25. doi:10.1155/2021/3416643

HANSEN'S DISEASE

Case No. 52 **Presenter:** Kelsey Hayes, MS4[1]
Akhil Abraham, MS4[2]
Renato Oracion, MD[3]
Clay J. Cockerell MD[2]
Chris Bandel, BS[2]
Aurora, MO[1]
Dallas, TX[2]
Odessa, TX[3]

History: A 32-year-old male presents to the clinic for evaluation of multiple spots on his face, ears, neck, trunk, abdomen, back, upper and lower extremities. Patient states that these spots have been present for 4 years and occur continuously. Patient denies any pruritus, pain, or burning of the spots. Patient also denies any aggravating factors. Patient is not currently taking any medications. Review of systems is negative for fever, malaise, or arthralgia, but positive for hoarseness.

Physical Examination: The patient appears well nourished and well developed and is oriented x3. Physical examination reveals flesh-colored papules and nodules on the forehead, cheeks, nose, perioral, bilateral ears, and neck. The patient demonstrates leonine facies. There are also diffuse flesh-colored papules and nodules on the chest, bilateral upper extremities, abdomen, and back. The bilateral lower extremities have flesh colored papules and nodules with areas of ulceration. There is no cervical lymphadenopathy, no oral/mucosa involvement, or hair or nail lesions. Punch biopsy of a lesion on the upper extremity is subsequently performed.

Histopathology: Granulomatous inflammation in the dermis with a number of cells that have features suggestive of histiocytes containing microorganisms. There is increased lymphocytic and giant cell clustering into well-formed granulomas. There is a grenz zone with no involvement by the underlying pathology in the epidermis. A fite stain revealed numerous acid-fast bacilli. PAS stain was negative for hyphae.

Diagnosis: A diagnosis of Hansen's Disease is made based on clinical presentation and histopathology results.

Clinical Course: The patient was notified of the biopsy results. An extensive discussion was held regarding pathogenesis and treatment options of the patient's skin disease. The patient was started on ROM regimen to minimize side effects and reactions to treatment. The ROM regimen includes oral Minocycline HCl 100 MG, oral Ofloxacin 400 MG, and oral Rifampin 300 MG (x2) taken after supper every 12th of the month. Patient is given Silver Sulfadiazine 1% External Cream BID for leg ulcers. Patient was instructed to return to the clinic in 1 month for follow-up.

Points of Emphasis: This case may depict Lucio's phenomenon. It is a fairly uncommon reaction that occurs in untreated lepromatous leprosy. Its clinical presentation consists of ulcerations of the skin that are painful. Its pathogenesis is unknown but is believed to occur through the activation of complement similar to erythema nodosum leprosum. Hansen's Disease continues to impact millions of people worldwide. From a clinical point of view, research to prevent leprosy reactions and their lasting impact is still needed.

References:

1. White, C., & Franco-Paredes, C. (2015). Leprosy in the 21st century. *Clinical microbiology reviews*, *28*(1), 80–94. https://doi.org/10.1128/CMR.00079-13

2. Villahermosa, L. G., Fajardo, T. T., Jr, Abalos, R. M., Cellona, R. V., Balagon, M. V., Dela Cruz, E. C., Tan, E. V., Walsh, G. P., & Walsh, D. S. (2004). Parallel assessment of 24 monthly doses of rifampin, ofloxacin, and minocycline versus two years of World Health Organization multi-drug therapy for multi-bacillary leprosy. *The American journal of tropical medicine and hygiene*, *70*(2), 197–200.

3. Sehgal V. N. (2005). Lucio's phenomenon/erythema necroticans. *International journal of dermatology*, *44*(7), 602–605. https://doi.org/10.1111/j.1365-4632.2005.02567.x

CUTANEOUS TUBERCULOSIS

Case No. 53 **PRESENTER:** Alejandra Méndez, MPH
Caroline Daggett, MD
Bethany Vincent, MD
New Orleans, Louisiana

History: A 42-year-old man who immigrated from Honduras presented to outpatient clinic for follow-up of recent hospitalization including a 1-month history of fevers, myalgia, night sweats, and malaise with past medical history of tuberculosis (TB) and dermatomyositis (anti-Ro52 Ab and anti-MDA5 Ab). The patient was not tolerating RIPE therapy due to nausea, vomiting, and abdominal pain, and was admitted for treatment. Bruising and lesions were noted on the left upper extremity.

Dermatology was consulted for assessment of the lesions. The patient reported painful, swollen lesions on the left fourth and fifth fingers, wrist, and arm that worsened over four months. The left, fourth finger had open lesions, draining purulent fluid. He was unable to identify the progression of the lesions.

Physical Examination: Bilateral scalp, face, neck, chest, abdomen, back, arms, forearms, hands, palms, thighs, legs, ankles, feet, soles, hair, nails clear except:
- hyperpigmented, indurated, ovoid plaques on left medial forearm and upper arm
- hyperpigmented, fluctuant plaque on left volar wrist
- erythema and purulent draining nodule of left dorsal 4th digit
- erythematous patch with fluctuant, erythematous nodule on PIP joint of left dorsal 5th digit

Laboratory Data: NA
Microbiology:
Acid fast bacilli (AFB) tissue culture and smear: *Mycobacterium tuberculosis* complex
Mycobacterial (MTB) PCR from abscess: positive
Blood culture: no growth
Anaerobic tissue culture: no growth
Aerobic tissue culture: no growth
Fungal tissue culture: no growth

Imaging: CT chest without contrast: There are diffuse scattered micronodules seen bilaterally in the lungs, ranging in size from 2-4 mm. The lungs demonstrate some areas of posterior basal interlobular septal thickening and linear areas of scar. The impression is consistent with diffuse miliary nodules, worsened from CT scan eight months prior.

Histopathology: Skin, left forearm, punch biopsy. Histopathology demonstrates a viable epidermis with minimal changes and overlying basket weave stratum corneum. The superficial dermis shows some perivascular and peri-adnexal granulomatous inflammation. With descent into the deep dermis and subcutaneous tissue, there is heavy acute inflammation and karyorrhectic debris, consistent with necrosis. AFB staining highlights some small, elongated organisms. GMS staining is negative for fungal organisms. Gram staining is overall negative. Clinicopathologic features demonstrate granulomatous inflammation and necrosis containing AFB positive organisms, consistent with the patient's history of disseminated tuberculosis.

Clinical Course: On admission for nausea, vomiting, and abdominal pain, Infectious Disease (ID) was consulted to assist with TB treatment. Patient had a history of hepatotoxicity and intolerance to RIPE therapy, which was due to pyrazinamide treatment. He was subsequently placed on alternative treatments of ethambutol, moxifloxacin, and rifampin.

On the second day of admission, the patient spiked a fever of 102.1^0 F with worsening purulence and drainage from the left 4th finger. Empiric Vancomycin and Cefepime were started for broad-spectrum coverage of potential cellulitis. Dermatology was consulted for purulent, draining lesions on the hand and the rash on the left arm. Dermatology performed a punch biopsy from a lesion on the left forearm to determine etiology. Orthopedics was consulted, collected cultures, and performed an incision and drainage. Results from punch biopsy of the left forearm and MTB PCR culture from the left 4th digit showed disseminated tuberculosis with cutaneous involvement, and he was diagnosed with disseminated TB involving skin, lung, and muscle.

Throughout his hospital course, the patient's antibiotics were adjusted by ID multiple times due to patient's symptoms, and despite gradual titration of medications, the patient continued to have severe gastro-intestinal symptoms, requiring PEG tube and G tube placements. The patient was transitioned to J tube placement, with administration of medications compounded by pharmacy and amikacin was added to his regimen of ethambutol, moxifloxacin, and rifampin. He tolerated tube feeds well and transitioned to oral intake without nausea or vomiting. There was mild improvement in the left hand and arm lesions. However, he later developed effusions on the left flank, left knee, and left elbow which are thought to be TB related, and primary team is continuing to work this up with imaging and possible surgical intervention. The patient remains hospitalized and continues to develop other medical issues, such as supraventricular tachycardia, deep venous thrombosis, and acute kidney injury to name a few. His discharge planning continues to be an issue due to his diagnosis of disseminated TB and difficulty ensuring administration of antibiotics.

Diagnosis: Cutaneous tuberculosis

Points of Emphasis: This patient's presentation is consistent with cutaneous tuberculosis due to hematogenous dissemination of *Mycobacterium tuberculosis*, an acid-fast bacillus, likely originating from the lungs. While cutaneous tuberculosis is rare, it is common in immunocompromised patients and immigrants from endemic countries. Cutaneous tuberculosis continues to be an elusive and challenging diagnosis for dermatologists to make given the varied morphological presentation and wide differential diagnosis. Disseminated cutaneous tuberculosis is typically marked by profuse, discreet, pinpoint purpuric, papules topped with minute vesicles, which become umbilicated and crusted, followed by atrophic, depressed scars. However, research has shown an atypical presentation mimicking cellulitis, similar to our patient.[1]

A rapid diagnosis of cutaneous tuberculosis is needed for patients to achieve timely implementation of therapy. Diagnosis is confirmed by mycobacterial culture, stained smears, and skin biopsy. Histopathology shows hyperkeratosis, acanthosis, or papillomatosis in addition to tuberculoid granulomas and focal or confluent necrosis.[2] Acute inflammation is represented by neutrophilic infiltration with abscesses in the dermis while chronic inflammation may show lymphohistiocytic and plasma cell infiltrate. Treatment for systemic tuberculosis is sufficient for cutaneous tuberculosis. Similarly, adherence with treatment is important as improper use can lead to side effects and development of drug-resistance. Intolerance and resistance to medications make management challenging, requiring a longer individualized regimen with the addition of second-line medications including bedaquiline, moxifloxacin, linezolid, and amikacin.[3] By using clinical suspicion and appropriate labs, a timely diagnosis can be made to manage this life-threatening condition.

References:

1. Yeh LJ, Shively NR, Isacke RN, Dowling CA, Stogsdill PB. Miliary tuberculosis characterised by lipomembranous fat necrosis. The Lancet infectious diseases. 2015 Dec 1;15(12):1497.
2. Kaul S, Jakhar D, Mehta S, Singal A. Cutaneous tuberculosis. Part II: Complications, diagnostic workup, histopathological features, and treatment. Journal of the American Academy of Dermatology. 2022 Feb 8.
3. Van Zyl L, Du Plessis J, Viljoen J. Cutaneous tuberculosis overview and current treatment regimens. Tuberculosis. 2015 Dec 1;95(6):629-38.

MYCOBACTERIUM MARINUM INFECTION

Case No: 54

Presenter: Chris Logas, DO
Carlos Ricotti, DO
Miami, FL

History: A 40-year-old male presented to our dermatology clinic with worsening red, painful and swollen right hand. Three months prior the patient had visited a hand surgeon for what he perceived as a muscular “knot” on the dorsal hand. The patient received a local corticosteroid injection and went swimming in the ocean later that same day. Within a few weeks of the injection the skin along the hand developed redness with tenderness and edema. An MRI demonstrated soft tissue swelling. Due to concern for an infectious nidus, a blunt dissection was performed which yielded negative cultures. Since the exploratory surgery, he states his symptoms have worsened with the swelling and redness spreading to incorporate more of his hand. The patient denies any past medical history, allergies, or medications. He denies alcohol or drug use and is an avid diver.

Physical exam: On the right dorsal medial hand there is an 8 cm by 5 cm poorly defined nodule with overlying redness and scale. Also at the midline of the nodule is a 4 cm healing incision with two sutures.

Laboratory Data: Normal WBC, CMP, ESR.

Histopathology: There was a diffuse granulomatous inflammatory infiltrate with focal caseation. Stains for acid fast bacilli demonstrated numerous acid fast rods characteristic of an atypical mycobacterial infection.

Clinical Course: At the time of the visit a PCR was done which was positive for *Mycobacterium marinum*. The patient received oral doxycycline, oral clarithromycin, intravenous tigecycline and intravenous amikacin.

Diagnosis: Atypical mycobacterial infection to *M. marinum.*

Points of Emphasis:
The diagnosis of mycobacterial infections are often delayed due to nonspecific symptoms, lack of suspicion, and nondiagnostic cultures and histopathology. There is no absolute consensus on how to treat these patients but there are various antimycobacterial antibiotics available. Due to comorbid conditions, some patients may not tolerate traditional systemic therapy. Another potentially underutilized modality is laser, specifically photodynamic therapy and CO2, which have shown favorable outcomes. For monitoring treatment effectiveness, a recent study suggests ultrasound can be used, particularly when sporotrichoid spread has occurred.

References:

1. Wenlong H, Qiunan Y, Wenhao C, Yumo L, Tingting Z, Hong R. The combination of photodynamic therapy and fractional CO2 laser for

mycobacterium marinum infection. Photodiagnosis Photodyn Ther. 2021 Sep;35:102391. doi: 10.1016/j.pdpdt.2021.102391. Epub 2021 Jun 11. PMID: 34119710.

2. Trčko K, Plaznik J, Miljković J. Mycobacterium marinum hand infection masquerading as tinea manuum: a case report and literature review. Acta Dermatovenerol Alp Pannonica Adriat. 2021 Jun;30(2):91-93. PMID: 34169709.
3. Yang Z, Liu C, Xiong H, Shi D. Photodynamic therapy, a promising treatment approach for cutaneous infectious granulomas. Photodiagnosis Photodyn Ther. 2022 Jun 9;39:102952. doi: 10.1016/j.pdpdt.2022.102952. Epub ahead of print. PMID: 35691563.
4. Wang X, Zhao Q, Li J, Liu Y, Ma S, Liu H, Qin J, Zhang F. Evaluation of early manifestations of spreading pattern Mycobacterium marinum infection by ultrasonography. Skin Res Technol. 2022 May;28(3):489-490. doi: 10.1111/srt.13147. Epub 2022 Apr 3. PMID: 35368124.

CUTANEOUS SECONDARY (NODULAR) SYPHILIS

Case No. 55 **PRESENTER:** Soo Hyun Choi, BA
Ashley Allen, MD
Alicia Cool, MD
New Orleans, LA

History:
The patient is a 45-year-old male with a history of HIV infection and anxiety who presented for evaluation of lesions on body which started 3 weeks prior as a pustule on his right wrist. The lesions then progressed to involve bilateral upper and lower extremities, trunk, face, scalp, and groin. The pustules resolve, but there are persistent firm, red papules and plaques. Lesions are asymptomatic – denies pruritus or pain. Denies manipulation of the lesions. He does report an itchy rash on his groin and gluteal folds. He was given clotrimazole cream yesterday for this rash, which he has not yet started using. Of note, he was seen by infectious disease one day prior to presentation at which time labs were ordered and he was prescribed prophylactic bactrim, valtrex, and restarted on HAART as he had been off treatment for 1 year.

Physical Examination:
Constitutional: well-developed and well-nourished
Neurological: alert and oriented to person, place, and time
Skin
Scalp: few scattered erythematous papules
Face: few scattered erythematous papules on the forehead and cheeks; erythematous plaque with overlying scale on right mandible
Neck: clear
Chest: few erythematous papules
Abdomen: erythematous papules, notable large erythematous nodule with overlying scale on left lower abdomen
Back: scattered erythematous papules
BUE: erythematous papules scattered; few erythematous macules on palms
BLE: scattered erythematous papules and nodules with overlying scale
Groin: erythematous macules and papules on penis, scrotum, inguinal folds. No ulcerations. Erythematous scaling macerated patches in inguinal folds.

Laboratory Data:
Labs ordered 1 day prior to presentation:
RPR: positive, titer 1:1024
FTA-ABS: positive
CD4 count absolute: 170 [Ref: 500-1500]
HIV RNA quantitative: 701,000 copies/mL

Histopathology:
Given the uncertainty the diagnosis, this case was sent to Mayo Clinic for consultation.
MAYO FINAL DIAGNOSIS
1. Skin, left abdomen, punch biopsy: Superficial and deep heavy lymphoplasmacytic inflammatory infiltrate. Psoriasiform dermatitis with lichenoid lymphoplasmacytic inflammation. Given this pattern and the patient's history, the findings are compatible with **cutaneous secondary (nodular) syphilis** despite absence of organisms on the *Treponema* and spirochete stains.

Clinical Course:

- Patient received punch biopsy for H&E which was consistent with nodular secondary syphilis. Punch biopsy was also sent for tissue culture and returned negative (aerobic/anaerobic/acid-fast bacilli/fungal). Given RPR titer (1:1024), RC was treated for latent syphilis per infectious disease with intramuscular penicillin weekly for 3 weeks.

Diagnosis:
Cutaneous secondary (nodular) syphilis

Points of Emphasis:
Diagnosis of syphilis can be made despite *Treponema* stains being negative for spirochetes. Sensitivities of silver stain and immunohistochemistry have been reported to be around 33-70%, and 70%, respectively.

Recurrence of syphilis is more common in immunosuppressed patients and HIV can alter the clinical presentation.

References:
Flamm, A; et al. Histologic features of secondary syphilis: A multicenter retrospective review. *J Am Acad Dermatol*. 2015;73(6):1025-1030.
Kenyon C, Osbak KK, Crucitti T, Kestens L. Syphilis reinfection is associated with an attenuated immune profile in the same individual: a prospective observational cohort study. *BMC Infect Dis*. 2018;18(1):479.

DISSEMINATED HISTOPLASMOSIS IN A RENAL TRANSPLANT PATIENT

Case No. 56

PRESENTER: Hannah Dakin, MD
John Miller, MD
Trent Massengale, MD
New Orleans, LA

History: A 50-year-old African American female with ESRD on HD s/p a failed renal transplant secondary to pre-eclampsia on chronic immunosuppression with Prednisone and Tacrolimus presented to the ED with a pustular facial rash present for about a month, abdominal pain, and fever. She was found to be septic with pancytopenia, cavitary lung lesions, and hepatocellular injury.

Physical Examination: Numerous pustules and crusted papules and nodules on an erythematous/hyperpigmented base scattered throughout the entire face. Similar but fewer lesions to upper back and chest. Large ulcerative eschar to central upper lip. BLE spared.

Laboratory Data: Blood cultures positive for *Histoplasma*. CBC significant for leukopenia of 4.5 K/uL, thrombocytopenia of 42 K/uL, and normocytic anemia with Hgb of 7.2 on initial presentation. Prolonged PT that corrected on mixing study. CMP with Na of 132, K of 2.9, AST elevated to 71, and alkaline phosphatase elevated to 332.

Histopathology: Epidermis of normal thickness. Dermis containing granulomatous inflammation, composed of histiocytes with admixed lymphocytes. Special stains for mycobacteria (AFB, Fite) negative. PAS and GMS stains with fungal organisms, present as small yeast forms in small clusters within the granulomas. Morphologic features consistent with histoplasmosis.

Clinical Course: Skin biopsy collected from forehead was consistent with suspected diagnosis of disseminated histoplasmosis. Patient was started on IV Amphotericin B 3 mg/kg daily for a 1-2 week course of induction therapy with plans to transition to Itraconazole thereafter.

Diagnosis: Disseminated histoplasmosis

Points of Emphasis: Histoplasmosis is caused by *Histoplasma capsulatum*, a dimorphic fungus typically found in soil containing bird or bat droppings and transmitted via inhalation of fungal spores.[1] It is endemic to the central and eastern US, around the Ohio and Mississippi River Valleys.[1] In immunocompetent individuals, spores are contained by alveolar macrophages and cleared primarily by the Th1 immune response[2], and individuals are asymptomatic or present with a mild, flu-like illness.[3] In immunocompromised hosts, which are most commonly AIDS patients, though other cases in solid organ transplant recipients have been noted[1], the pathogen can invade the bloodstream leading to disseminated histoplasmosis. Subsequently, the most commonly affected organs are liver, spleen, GI tract, and bone marrow, and blood culture is the most sensitive method of detection.[2]

Cutaneous lesions occur in a significant number of patients and can be the initial manifestation, making skin biopsy the primary means of diagnosis.[3] Additionally, skin findings are quite polymorphic, making the role of histopathology critical. The most commonly described pattern includes papules, plaques, or nodules with or without ulceration on the face, trunk, and upper extremities;[3] however, pustules, verrucous nodules, mucocutaneous ulcers, acneiform, varicelliform, erythema multiforme-like, molluscum contagiosum-like, and vasculitic lesions have all been described.[4]

Likewise, there is a broad variety of histopathologic patterns of cutaneous histoplasmosis, necessitating a high index of suspicion and low threshold for ordering special stains, including GMS, PAS, and fungal stains. This is especially important in cases where leishmaniasis or trypanosomiasis are suspected, as *Histoplasma* yeast can simulate the appearance of these protozoa on H&E stain, so fungal stains should be performed to differentiate.[3] The most common histological patterns include: diffuse dermal karyorrhexis with predominantly extracellular organisms, diffuse dermal histiocytosis with primarily intracellular organisms, and granulomatous inflammation.[3] However, many other less common patterns have been seen, including perifollicular, nodular pseudomyxoid, pyogenic granuloma-like, lichenoid, and superficial, mid, and deep perivascular dermatitis.[4]

References:

[1]Angsutararux, Taksaon, et al. “Disseminated Histoplasmosis in a Kidney Transplant Patient.” *Transplant Infectious Disease*, vol. 23, no. 1, 2020, https://doi.org/10.1111/tid.13405.

[2]Zanotti, Paola, et al. “Disseminated Histoplasmosis as AIDS Presentation. Case Report and Comprehensive Review of Current Literature.” *Mediterranean Journal of Hematology and Infectious Diseases*, vol. 10, no. 1, 2018, https://doi.org/10.4084/mjhid.2018.040.

[3]Hong, Janet H., et al. “Cutaneous Presentation of Disseminated Histoplasmosis as a Solitary Peri-Anal Ulcer. Case Report and Discussion.” *Journal of Cutaneous Pathology*, vol. 43, no. 5, 2016, pp. 438–443., https://doi.org/10.1111/cup.12682.

[4]Ollague Sierra, Jose E., and Jose M. Ollague Torres. “New Clinical and Histological Patterns of Acute Disseminated Histoplasmosis in Human Immunodeficiency Virus–Positive Patients with Acquired Immunodeficiency Syndrome.” *The American Journal of Dermatopathology*, vol. 35, no. 2, 2013, pp. 205–212., https://doi.org/10.1097/dad.0b013e31822fd00a.