

2020 Rheumatologic Dermatology Society Annual Meeting Abstract and Selected Posters



Sclerotic Skin Disease

1. PILOT STUDY EVALUATING THE EFFICACY OF A TOPICAL PDE-4 INHIBITOR FOR MORPHEA

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Background: Morphea is an autoimmune fibrosing skin disorder that is associated with significant morbidity, and there is a great need for more effective treatment options. Preclinical studies have suggested that systemic PDE4 inhibition attenuates the oxidative processes that mediate fibrosis. Crisaborole, a novel topical PDE4 inhibitor has demonstrated remarkable anti-inflammatory effects in atopic dermatitis.

Objective: To determine the efficacy of crisaborole 2% ointment for the treatment of morphea.

Design: This phase 2, pilot, open-label, single-arm clinical trial included patients 18 years or older with clinically active morphea involving <20% body surface area. Patients were recruited from Duke University Medical Center from September 2018 to March 2020 and received crisaborole 2% ointment, applied twice daily, for 12 weeks. Data were analyzed from May 2020 to September 2020.

Main outcomes and measures: The primary end point was histologic dermal thickness and fibrosis of the sentinel plaque at 12 weeks compared to baseline. Secondary outcomes included change in patient and physician reported outcome measures using Dyspigmentation, Induration, Erythema, and Telangiectasias (DIET) score, Localized Scleroderma Clinical Assessment Tool (LoSCAT) and Skindex-29 12 weeks compared to baseline.

Results: A total of 7 patients (0 male, [0%]; mean [SD] age, 53.3 [17.4] years) were included in the analysis. Measurements of dermal thickness of 4 currently available pairs showed a decrease in dermal thickness in 3 of the 4 patients (mean 1.4 mm or 26%). At the end of 12 weeks, averaged DIET score decreased from 5.9 to 4 (31.7%, $p<0.05$), disease activity measured by mLoSSI score decreased from 19 to 7 (63.2%, $p<0.05$) and patient-reported Skindex-29 emotion score decreased from 29.1 to 20.6 (29.4%, $p<0.05$). No statistically significant difference was observed in LoSDI, skindex-29 symptoms or functions scores.

Conclusion: Crisaborole 2% ointment shows promise in the treatment of morphea. Larger prospective studies are warranted.

2. NEUROLOGIC MANIFESTATIONS OF MORPHEA: A CROSS SECTIONAL STUDY OF THE MORPHEA AND ADULTS AND CHILDREN (MAC) COHORT

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Neurologic findings are a poorly studied extracutaneous manifestation of morphea. A cross-sectional analysis was performed of patients in the Morphea in Adults and Children Registry from 2007 to 2020 to fill this knowledge gap. Of 753 patients, the majority were female (82%), Caucasian (73%), with linear morphea (50%). Neurologic symptoms were present in 7.3% of patients (n=55). Of these patients, 47% had linear morphea (en coup de sabre), 18% had hemifacial atrophy, and 15% had both. Patients with neurologic involvement had younger age of onset when compared to patients without (14 and 29, $p<0.0001$). The most common neurologic symptom was headache (92.7%) and the least common was seizure (5.5%). Patients with neurologic involvement had minimal disease activity using LoSAI and PGA-A (0 (0-1) and 0 (0-10)) when compared to those without (4 (0-11) and 15 (0-40)) ($p<0.0001$ and $p<0.0001$). However, patients with neurologic involvement had higher PGA-D scores (30 (20-61.75) versus 20 (10-40), $p=0.0002$). LoSDI scores did not strongly correlate with presence of neurologic symptoms (8 (5-14) in neurologic group versus 11 (6-20) in non-neurologic group, $p=0.04$). MRI was most commonly ordered for these patients (40%), and brain parenchyma most frequently imaged (36.4%). Intracranial abnormalities were rare (9%), and included ipsilateral areas of T2 hyperintensity and enhancement found in white matter. Soft tissue abnormalities were more common (18%). The presence of deep involvement of morphea of the head and neck did not correlate with presence of neurologic symptoms or findings on neuroimaging, and neuroimaging findings did not appear to have a relationship with symptoms. Our results show that while neurologic findings are uncommon, they are most often seen in patients with linear morphea (en coup de sabre), and appear independent of cutaneous lesion activity and depth. Practitioners should be aware of neurologic manifestations of morphea and provide prompt referral for proper evaluation and management.

3. CHARACTERIZING MORPHEA SUBSETS USING A MULTI-CENTER, PROSPECTIVE, CROSS-SECTIONAL ANALYSIS

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Morphea is an inflammatory condition of the skin and soft tissue that results in excessive collagen deposition. Numerous classification schemes for morphea exist, but none have been evaluated for accuracy in categorizing large patient cohorts. We aimed to determine which existing morphea classifications (i.e. Padua criteria, Peterson criteria, and European Classification scheme) best characterized and identified clinically relevant morphea patient subsets. We conducted a cross-sectional study of adults and children from two prospective cohorts - The Morphea in Adults and Children (MAC) at UT Southwestern and the National Registry for Childhood-Onset Scleroderma (NRCOS) at University of Pittsburgh. Patient demographics, morphea subtype, quality of life measures, disease activity as measured by the Localized Scleroderma Cutaneous Assessment Tool scores during their initial visits were examined. A total of 944 adults and children were included in this study. The mean (IQR) age of patients was 16 (8-44) years, and 741 of 944 were female. Majority were white individuals and had the linear or generalized subtype. Utilizing the previously published Padua criteria, the majority of the patients were classified to have linear morphea morphea (n=474, 50%), followed by generalized (n=244, 26%), plaque (n=141, 15%), mixed (n=38, 4%), and pansclerotic (n=3, 0.3%). Overall, the Padua criteria failed to classify 5% of patients that were found to be "indeterminate" in comparison to the Peterson criteria and European classification schemes which failed to classify 46% and 49% of patients, respectively. The Padua criteria is widely used by clinicians to categorize morphea patients and performed best in classifying patients into groups with cohesive demographic and clinical features. However, it has ambiguities that might lead to misclassification particularly in terms of generalized and pansclerotic morphea and descriptors such as morphea profunda. Consensus based approaches are needed to address these ambiguities in order to develop a unified classification scheme.

4. GEOGRAPHIC DISTRIBUTION AND ENVIRONMENTAL TRIGGERS OF SYSTEMIC SCLEROSIS AND EOSINOPHILIC FASCIITIS IN MASSACHUSETTS

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Systemic sclerosis (SSc) and Eosinophilic fasciitis (EF), are two rare fibrosing connective tissue disorders associated with high morbidity and mortality (SSc). Although their exact pathogenesis remains unclear, assessment of high incidence geographic clusters may be a crucial first step in cause identification. This study's objectives are to use QGIS, a geospatial processing program, to analyze the geographic distribution of SSc and EF in Massachusetts between 1989-2019 and evaluate for potential environmental triggers for each of these diseases. Demographic and geographic patient data for SSc and EF cases were obtained from two academic tertiary centers in Massachusetts. Incidence rates for SSc were calculated per geographic population based on zip code. Using QGIS3.10, case count and incidence maps were created for EF and SSc, respectively, and compared to environmental exposure and social justice maps to determine trends in etiologic triggers and demographic clusters. In total, 2196 SSc cases and 74 EF cases were identified. The presence of hazardous waste facilities ($p=0.0039$) and oil release or disposal sites ($p=0.0203$) is associated with an increased risk of SSc. Although the association between chemical release sites and SSc incidence is not independently significant ($p=0.3166$), a spatial correlation exists. These three toxins together pose a significantly increased risk of SSc ($p=0.0002$). Particulate pollution levels were greater in higher density areas of both SSc and EF. Regions with higher EF counts were in proximity to chemical release sites, ash pollution, and combustion facilities. The social justice maps of low income and minority communities correlate with areas of increased SSc and EF incidences. The presence of SSc and EF regional clustering and the increased density of the aforementioned environmental toxins in those areas suggests that environmental factors and social determinants may play a role in disease development.

5. RECURRENCE OF FACIAL MORPHEA POST-FAT TRANSFER: A NEED FOR CAUTION

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Autologous fat transfer is an important modality used to treat the cosmetic sequelae of facial morphea, which causes significant disfigurement and impairment in life quality. Recent studies postulate that fat transfer may be performed regardless of morphea activity. In contrast to this hypothesis, we present two cases of reactivation of facial morphea after autologous fat transfer due to continuing activity. The first patient initially presented at age fourteen with Parry Romberg syndrome. After one year of progressive symptoms despite systemic therapy, the patient underwent autologous fat transfer, with tissue atrophy recurrence noted shortly thereafter. The patient subsequently went through seven repeated fat transfers with recurrent tissue loss after each procedure. Her fat transfers were determined to be unsuccessful due to incomplete control of disease activity and continued inflammation. The second patient initially presented at age ten, with a slowly spreading depressed area on the forehead consistent with linear morphea. The patient did not subsequently follow up with her dermatologist for years. Despite not having recent imaging to evaluate for activity, the patient was thought clinically to be quiescent, and underwent autologous fat transfer by craniofacial surgery. Several months after the procedure, a patch of alopecia reappeared on her scalp, which progressed to morphea-like changes with associated tenderness. She returned to see dermatology and was found to have linear morphea reactivated following fat transfer.

Reactivation of morphea following cosmetic procedures is associated with substantial emotional and financial distress, and the present cases emphasize the need for caution when it comes to planning for such procedures. Morphea patients should be managed through a multidisciplinary approach, with a dermatologist or rheumatologist working closely in conjunction with plastic surgery. Providers should recommend waiting until proven lesion inactivity, not only clinically but also through objective measures such as MRI or 3D stereophotogrammetry, before pursuing cosmetic procedures.

6. JUVENILE LINEAR SCLERODERMA WITH FACIAL NEUROPATHY

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Abstract: A healthy two-year-old female presented to rheumatology clinic with 1-month history of a worsening linear forehead plaque. She was diagnosed with linear scleroderma of the face, or en coup de sabre. She had positive U1 small nuclear ribonucleoprotein (anti-U1 RNP) antibodies with concern for potential mixed connective tissue disease. Brain magnetic resonance imaging (MRI) showed midline frontal scalp signal abnormality associated with skin thickening with no underlying skull or brain abnormalities. Echocardiogram and swallow studies were normal. She was treated with intravenous (IV) methylprednisolone, oral prednisolone, and methotrexate injections. The patient achieved remission within seven months with repeat brain MRI showing resolution of the previous abnormality. Steroids and methotrexate were tapered off. Approximately 1.5 years after stopping methotrexate, the patient had a flare with jagged and erythematous borders of her forehead plaque and facial asymmetry. MRI face demonstrated interval volume loss in the subcutaneous soft tissue of her left lateral face with associated mild volume loss, edema, and enhancement of the left masseter muscle and orbicularis oculi. There was also focal thinning of the left parasagittal frontal scalp. Nerve conduction studies exhibited reduced left facial compound muscle action potential of the orbicularis oris, oculis, and nasalis consistent with left peripheral facial neuropathy. She resumed treatment with IV methylprednisolone and methotrexate. Now, at 9 years of age, her linear scleroderma is stable with plans to wean methotrexate, repeat nerve conduction studies, and address facial asymmetry with surgery. Teaching point: Linear scleroderma is the most common subtype of juvenile localized scleroderma. More than 20% of juvenile localized scleroderma can have extracutaneous features including musculoskeletal, neurological, vascular, ocular, and gastrointestinal manifestations. This case highlights a neurological sequelae of peripheral facial neuropathy. Risk factors for flares include relapsing course in first two years of treatment, longer follow-up time, and linear subtype.

7. A MULTI-INSTITUTIONAL STUDY EXAMINING THE EFFICACY OF AND CHALLENGES IN ACQUIRING INSURANCE APPROVAL FOR BOTULINUM TOXIN INJECTIONS FOR SYSTEMIC SCLEROSIS-ASSOCIATED RAYNAUD'S PHENOMENON

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Raynaud's phenomenon (RP)-associated pain, ulceration, and tissue loss is a major source of morbidity and negatively impacts quality of life, particularly in patients with connective tissue disease.¹ Accumulating evidence demonstrates that botulinum toxin is effective in providing symptomatic relief, improved perfusion, and functional improvement in refractory RP.³⁻⁹ Nonetheless, Botox® remains unapproved by the Food and Drug Administration (FDA) for this indication. We conducted a retrospective study at two academic medical centers to identify patients with systemic sclerosis (SSc) for whom insurance approval for Botox® for RP was attempted between 2014-2020 to determine accessibility and efficacy. Data was collected on disease severity, previous therapies, prior authorizations (PAs), appeals, peer-to-peer reviews, denial reasons, and whether symptoms improved with Botox®. 54 coverage attempts met eligibility criteria. In 43 attempts (80%), PAs were initially denied. The most commonly cited reason was "not covered for SSc/off-label use" (34/43; 79%). Of those patients initially denied, only 10 (23%) ultimately acquired coverage; 9/10 (90%) had documented tissue loss (defined as ulcers, autoamputation, and/or gangrene). Thirty-five patients (35/43; 81%) were ultimately denied coverage despite 89% having failed multiple previous therapies. Decreased QOL was documented in 21/54 cases (39%), but 15/21 (71%) still failed to obtain coverage. In total, 19/54 patients (35%) received coverage, all of whom had private insurance; no Medicare patients were approved. Of the 45 cases in which patients documented tissue loss, 38 ultimately received treatment with Botox® (either via insurance approval or via free supply), and 35 (92%) had improvement of their ulcers following treatment. Overall, 35/44 (80%) treated patients had sufficient benefit to indicate further treatment moving forward. Despite Botox®'s demonstrated efficacy, it remains an off-label use, and there are no FDA-approved treatments for RP. Given reported clinical benefits, policymakers should explore solutions to make Botox® more widely available for patients with severe RP.

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Miscellaneous/Clinical Cases

8. LOCAL HYALURONIDASE INJECTIONS AS TREATMENT FOR ORAL MICROSTOMIA CAUSED BY SYSTEMIC SCLEROSIS

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A 53-year-old female with limited systemic sclerosis on mycophenolate mofetil presented with disabling perioral skin tightening. She had been diagnosed with systemic sclerosis in 2001 when she developed Raynaud's phenomenon, esophageal dysmotility, and telangiectasias. Serology was positive for anti-nuclear antibody, Scl-70, and anti-Ro/SSA. Between 2011 and 2015, she developed skin tightening of her hands and mouth, along with interstitial lung disease. Mycophenolate mofetil dose was increased to 1500 mg twice daily. While all other symptoms improved, perioral skin tightening continued to progress. This was particularly distressing to the patient, as she was a musician who had previously enjoyed singing. She also noted profound negative impact from changes to her smile. Examination revealed significant radial perioral furrowing with lip retraction and decreased oral aperture. She had negative prayer's sign and was able to make fists. Skin tightening was mild and limited to distal to proximal interphalangeal joints. The decision was made to continue systemic treatment and begin monthly intradermal injections of hyaluronidase (200 units) of the upper and lower cutaneous lips. After just one treatment, oral aperture increased from 5.2 to 5.6 cm. Most importantly, her Mouth Handicap in Systemic Sclerosis score, which measures quality of life and functionality,¹ improved from 24 to 15 in one month. She noted greater confidence in her smile and improved ability to complete routine dental care. Overall, reconstructive procedures have gained momentum as a therapeutic approach in connective tissue disease including scleroderma.² Two other case reports have described hyaluronidase injections improving oral microstomia in sclerosing skin disorders with four sets of injection.^{3,4} Given that perioral symptoms are the leading cause of patient dissatisfaction in scleroderma, we find it critical to address this concern.⁵ Teaching point: Oral microstomia can be disabling in systemic sclerosis, and even a single local hyaluronidase treatment may be of great benefit.

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9. SEVERE MULTICENTRIC RETICULOHISTIOCYTOSIS TREATED WITH UPADACITINIB

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Abstract:

A 56-year old woman presented with a 5-day history of arthralgias and an erythematous papular eruption affecting the face, arms, chest, and upper back. She was noted to have associated synovitis of the hands and wrists bilaterally and was started on celecoxib. One week later, the patient returned with worsening pain and swelling in her hands in addition to new confluent, somewhat firm, erythematous papulonodules on the face, trunk, forearms, and dorsal hands. Two biopsies were performed with evidence of dermal histiocytic proliferation consistent with multicentric reticulohistiocytosis (MRH), and she was referred to our connective tissue disease clinic. Malignancy screening was completed, and the patient was started on hydroxychloroquine, methotrexate, and systemic corticosteroids. Infliximab was initiated because her disease continued to progress, and the dose was uptitrated to 10 mg/kg infused every 4 weeks. After 5 doses of infliximab, she continued to have progressive disease and the decision was made to discontinue infliximab in favor of upadacitinib 15 mg daily. Substantial improvement was noted after 8 weeks of therapy, and by the fifth month of follow-up, her arthritis had improved by 75% and her cutaneous lesions had nearly resolved. There are no well-defined treatment protocols for MRH, which is often refractory to therapy. Although upadacitinib has not been used in the treatment of MRH, there is mechanistic rationale to support its efficacy. The rapid and robust response to upadacitinib in our patient suggests that selective JAK-1 and possibly pan-JAK inhibition may play a significant role in the management of this condition and help prevent long-term disability.

Teaching points:

- Highlight the clinical manifestations of MRH, including the differential diagnosis of arthritis-dermatitis syndromes
- Describe the clinical evolution of MRH
- Examine the evidence for therapeutic options in MRH

10. REMISSION OF DERMATOMYOSITIS FOLLOWING ALLOGENEIC HEMATOPOETIC STEM CELL TRANSPLANT FOR CONCURRENT MYELODYSPLASTIC SYNDROME

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Dermatomyositis (DM) is an autoimmune inflammatory myopathy associated with malignancy in up to 30% of cases. We present the case of a 70-year-old male with anti-transcription intermediary factor-1 gamma (anti-TIF1 γ) DM and myelodysplastic syndrome (MDS) who experienced dramatic improvement after a recent allogeneic hematopoietic stem cell transplant (allo-HCT). Given that there are only four published reports of anti-TIF1 γ DM and MDS, this case offers new insights on managing patients with these rare but possibly life-threatening diseases. The patient initially presented with dramatic cutaneous features, including classic signs of DM, red-on-white patches, and psoriasiform dermatitis. Biopsy and antibody assays confirmed anti-TIF1 γ DM. Further workup revealed pancytopenia, raising suspicion for malignancy. A bone marrow aspiration and biopsy uncovered MDS with excess blasts (13%). Combination azacitidine and pevonedistat was started, which initially led to significant improvement in DM and blast percentage (8%). However, his DM flared soon after, with worsening muscle weakness and a rise in blasts. After seven cycles of chemotherapy, he underwent allo-HCT. This resulted in remarkable improvement in both diseases. A mild DM recurrence was managed successfully with topical steroids, despite tapering of immunosuppressive tacrolimus. Currently, eight months post-transplant, his DM is in remission without any medications. This is the first report of a dramatically favorable outcome of DM post allo-HCT. Although autologous hematopoietic stem cell transplant has proven a favorable therapeutic approach for severe, resistant autoimmune diseases, the data on allo-HCT is scant given its inherent risks of transplant-related mortality and graft-versus-host disease. Our case demonstrates an increasingly recognized benefit of allo-HCT: graft-versus-autoimmunity (GvA), which involves engrafting alloreactive donor T-cells eradicating autoreactive host T-cells responsible for autoimmune disease. This was demonstrated in the resolution of his DM recurrence despite tacrolimus taper. This case provides insights into novel therapeutic approaches for patients with DM and associated hematologic malignancy.

Teaching Point: Allogeneic HCT may be an effective therapeutic option for dermatomyositis associated with hematologic malignancy or disease.

11. ERYTHEMA ELEVATUM DIUTINUM: A CASE SERIES WITH EMPHASIS ON CLINICAL PRESENTATION AND TREATMENT RESPONSE

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Background: Erythema elevatum diutinum (EED) is a rare cutaneous vasculitis that typically presents with asymptomatic violaceous nodules or papules on the extensor surfaces.¹ EED has been associated with HIV infection, tuberculosis, hepatitis, as well as various autoimmune diseases.¹ In this study, we aim to better characterize the clinical presentation and treatment response of EED.

Methods: We conducted a retrospective study of all patients with EED seen at Brigham and Women's Hospital, Massachusetts General Hospital, the University of Pennsylvania, and New York University Langone Medical Center and confirmed 9 cases of biopsy-proven EED.

Results: Our patient population consisted of 9 females; mean age at symptom onset was 33.9 years. Nearly all patients (89%) presented with multiple lesions on the bilateral extensor surfaces and periarticular skin. Eight (89%) patients had involvement of the lower extremities, 6 (67%) of the upper extremities, and 5 (56%) of the feet. Lesion morphology at presentation varied widely; plaques were most common (67%), followed by papules (56%), and nodules (33%). Four of 8 patients (50%) had inflammatory bowel disease (IBD), all of whom were diagnosed with IBD prior to presentation with EED. Additional comorbidities in our patient group included hematologic disorders (38%), ocular abnormalities (25%), and psoriasis/psoriatic arthritis (12.5%). 57% of patients achieved remission in a mean treatment period of 4.5 months (range:4-6 months). Of those who achieved remission, 75% were treated with dapsone and 25% with sulfasalazine. Two patients also received successful surgical treatment of residual fibrotic nodules.

Conclusion: There is a paucity of existing literature on the clinical presentation and treatment of EED, with the largest series consisting of 13 patients for which treatment outcomes are not reported. The present study adds to this limited literature, suggests a predilection for occurrence in women and those with IBD, and underscores the efficacy of dapsone in select patients. Future collaborative investigation is warranted to collect larger numbers of patients with this rare entity.

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12. KOILONYCHIA SECONDARY TO RAYNAUD'S PHENOMENON: A RARE CO-OCCURRENCE

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Abstract: A 52-year-old woman with a thirty-year history of Raynaud's phenomenon presented with scooped nails on her bilateral hands. Over the past year, her nail plates had become brittle, ridged, and scooped-shaped. She did not have ulcerations of her fingertips but noted increasingly frequent and severe Raynaud's phenomena on both hands and occasionally her toes. She otherwise denied hair loss, nail pitting, rashes, oral ulcers, arthralgia, dysphagia, skin thickening, fever, fatigue, shortness of breath, chest pain, dry eyes or mouth, cough, constipation, or diarrhea. Her physical exam was notable for proximal leukonychia, erythronychia, longitudinal ridging, ragged cuticles, and concave-shaped nail plates on multiple nails on her left and right hands. Nailfold capillary microscopy revealed regular vessel architecture without signs of hemorrhage, avascular regions, or loss of capillary loops. Her comprehensive metabolic panel, complete blood count, ferritin, iron, total iron binding capacity, and unsaturated iron binding capacity were all within normal limits. Her tests for antinuclear antibody, anti-centromere antibody, anti-SCL70 antibody, anti-SM antibody, anti-RNP antibody, anti-LA antibody, and anti-RO antibody were negative. The patient was diagnosed with koilonychia and nail dystrophy secondary to primary Raynaud's phenomenon. She was started on 2% nitroglycerin ointment on the bilateral nailfolds and web spaces daily. After three months of treatment, she had near complete resolution of her nail dystrophy and koilonychia. This case highlights the rare occurrence of koilonychia in a patient with primary Raynaud's phenomenon who successfully reversed her koilonychia by treating her Raynaud's with topical nitroglycerin. Raynaud's phenomenon is associated with several nail findings, including parrot beak nails, brittle nails, and longitudinal ridging but reports of koilonychia are rare. We hypothesize that frequent vasoconstriction of peripheral digital vessels from Raynaud's led to poor blood flow, hypoxia, and altered formation of this patient's distal nail matrix.

Teaching Points: (I) Koilonychia may represent a complication of primary Raynaud's phenomenon, (II) Workup for koilonychia requires obtaining a thorough history and review of systems, examination for other dermatologic conditions, and laboratory testing to check for iron deficiency and autoimmune diseases, (III) Treatment of Raynaud's phenomenon with 2% nitroglycerin ointment may help reverse nail dystrophy and koilonychia.

13. COEXISTENT HYPOCOMPLEMENTEMIC URTICARIAL VASCULITIS AND BOWEL-ASSOCIATED DERMATOSIS-ARTHRITIS SYNDROME: TWO NEUTROPHILIC DERMATOSES WITH SIMILAR CLINICAL PRESENTATION

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Hypocomplementemic urticarial vasculitis (HUV) is a rare cutaneous neutrophilic small-vessel vasculitis that may have systemic involvement. Bowel-Associated Dermatitis-Arthritis Syndrome (BADAS) is a rare neutrophilic dermatosis associated with bowel surgery and inflammatory bowel disease. The patient presenting with both concurrently presents a unique diagnostic and therapeutic challenge.

A 47-year old man with a history of indeterminant colitis and primary sclerosing cholangitis developed painful red papules and plaques on his dorsal hands, scrotum, knees, and ankles a week after stopping budesonide in preparation for subtotal colectomy. Biopsy of the lesions revealed superficial mixed dermatitis with neutrophils and leukocytoclasia consistent with BADAS or another neutrophilic dermatosis. The rash resolved over several months on budesonide monotherapy. Nine months later he underwent emergency total colectomy and discontinued budesonide. Shortly after this the rash returned, and a repeat biopsy favored urticarial vasculitis. Review of systems at this time also revealed enthesitis in the hands, elbows, and knees. He experienced partial improvement with dapsone and topical corticosteroids. One year later the rash worsened with widespread plaques over the trunk and limbs, accompanied by low C3 and C4 levels, suggestive of HUV, without signs or symptoms of systemic involvement to suggest HUV Syndrome (HUVS). He resumed budesonide suppositories without effect. Prednisone led to temporary improvement in his skin and enthesitis but he relapsed when trying to taper. Intriguingly, metronidazole was also effective in clearing the number and intensity of his lesions, but was discontinued due to nausea and dizziness. Other antibiotics including doxycycline, clindamycin, and amoxicillin-clavulanate were not helpful. This patient's neutrophilic urticarial vasculitis in the setting of low complement levels is most suggestive of HUV, yet the presence of enthesitis and response to metronidazole favor BADAS. This case highlights the clinical similarity between disparate neutrophilic dermatoses and the therapeutic challenges of treating both concomitantly.

Teaching point: HUV and BADAS are both rare neutrophilic dermatoses that may present with overlapping clinical features.

14. AN ATYPICAL CLINICAL PRESENTATION OF DERMATITIS HERPETIFORMIS

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A 21 month old male presented with a two month history of a pruritic eruption that initially began on the buttocks before spreading to the trunk and extremities. Exam revealed scaly annular and arcuate pink plaques on the buttocks, lower abdomen, axillae, and ankles, accompanied by ill-defined pink, scaly plaques on both cheeks. The patient had been seen by several medical providers and treated for presumed tinea corporis, diaper dermatitis, and atopic dermatitis with various topical antifungals and corticosteroids without effect. Punch biopsy of the right chest revealed a mixed superficial dermal inflammatory infiltrate with neutrophils forming discrete microabscesses in the dermal papillae. Serum testing indicated an immunoglobulin A (IgA) antibody level of 82 milligrams/deciliter (normal 20-100 milligrams/deciliter) and serum tissue transglutaminase IgA antibody level over 100 units/milliliter (positive >10 units/milliliter). Direct immunofluorescence was not performed with the initial biopsy, and at follow up was deferred by the family to minimize additional invasive testing. A diagnosis of dermatitis herpetiformis (DH) was made. DH is a cutaneous eruption associated with gluten sensitivity that most commonly manifests in adults in the fourth decade. It classically presents as intensely pruritic papules and vesicles located on extensor surfaces of the extremities and buttocks, though this case represents a rare variant manifesting with a striking arcuate and annular morphology. Further, the case reported herein represents one of the youngest patients known to be diagnosed with this condition. Though systemic dapsone is a typical first-line treatment for DH, the authors opted to proceed with oral colchicine and a strict gluten-free diet, with rapid improvement in cutaneous lesions and pruritus. Teaching Point: Though DH is more commonly seen in adults, it should be considered in patients of all ages with pruritic eruptions that do not respond to conventional antifungal or corticosteroid treatment.

15. SUBCUTANEOUS SARCOIDOSIS WITH REACTIVATION OF DORMANT SCARS

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A 54-year-old previously healthy female presented with several firm subcutaneous nodules on the extremities, which started appearing approximately one year earlier. The nodules were stable in size, persistent, and otherwise asymptomatic. Shortly before the development of the nodules, the patient noticed that two scars on her right ankle and knee had started becoming raised and discolored. These scars were from injuries sustained in childhood and had been flat for decades prior to the observed changes. The patient noted that the nodules and hypertrophic scars appeared approximately six months after a motor vehicle accident in which there was no direct trauma to the scars. She denied any personal or family history of autoimmune conditions. An excisional biopsy of a nodule on the right forearm was performed and was suggestive of subcutaneous sarcoidosis. Laboratory results revealed negative ANA, 25-hydroxyvitamin D deficiency, elevated ACE (265), mildly elevated ESR (34 mm/hr), and a negative Quant-Gold. An X-ray revealed hilar fullness and chest CT showed diffuse moderate mediastinal and hilar adenopathy in addition to perilymphatic reticulonodular pulmonary opacities consistent with a diagnosis of pulmonary sarcoidosis. The patient was initiated on methotrexate 7.5mg weekly and titrated up to 15 mg weekly, in addition to folate 1mg daily and betamethasone 0.05% cream applied to raised scars twice daily. At two-month follow-up, the patient reported her nodules had greatly reduced in size with no development of new nodules. She denied any shortness of breath or cough. The patient also reported using the betamethasone cream on her right knee and ankle, which was helpful in restoring her scars to their flat baseline appearance with no further symptoms.

Teaching point: In this case, development of hypertrophic scars after decades of dormancy coincided with the appearance of subcutaneous nodules consistent with sarcoidosis following a motor vehicle accident. Sarcoidosis is a disease of unknown etiology which commonly involves the skin. Reactivation of old scars is an uncommon symptom and warrants further exploration to understand its clinical significance and what systemic processes may contribute to its development.

16. CUTIS LAXA PHENOTYPE RESULTING FROM GAMMA-GLUTAMYL CARBOXYLASE MUTATION

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A 21-year-old female initially presented to dermatology clinic for a skin check, at which time she was noted to have excessive skin laxity on exam. She was referred to our connective tissue disease clinic and a geneticist for further evaluation. She had experienced increased laxity in the skin of the neck, arms, and back for the past several years, which started to become noticeable around the time she was prescribed sertraline for anxiety disorder. Her medical history was also notable for a heart murmur at birth and later finding of mild-to-moderate pulmonic stenosis.

For her skin changes, cutis laxa was suspected clinically, and she underwent genetic panel testing for 11 genes implicated in genetic cutis laxa: *ALDH18A1*, *ATP6V0A2*, *ATP6V1E1*, *ATP7A*, *EFEMP2*, *ELN*, *FBLN5*, *LTBP4*, *PYCR1*, *RIN2*, *SLC2A10*. No pathogenic variants or variants of unknown significance were identified. Subsequently, whole exome sequencing was pursued, which revealed compound heterozygous mutations in gamma-glutamyl carboxylase (*GGCX*). Following this result, additional testing revealed a coagulopathy with prolonged international normalized ratio (INR) of 1.5 with decreased levels of multiple vitamin K-dependent coagulation proteins. *GGCX* mutations have been associated with various clinical manifestations present in this patient, including her cutis laxa phenotype, apparent vitamin K-dependent coagulation factor deficiency, and congenital heart defects.¹ *GGCX* mutations have also been associated with other dermatologic, ophthalmologic, and bone abnormalities that were not present in this patient's case. Her treatments to this point have included surgical removal of excess skin (bilateral brachioplasty, neck lift, and removal of excess skin from the torso) as well as non-ablative Fraxel laser tightening of the abdomen, both with good effect. She is also being treated with vitamin K supplementation for her associated coagulopathy.

Teaching Point: This patient's clinical presentation will allow us to (1) review inherited and acquired associations with cutis laxa and highlight the importance of whole exome sequencing following negative genetic testing in suspected genetic causes; (2) discuss the potential role of medications in worsening the clinical manifestations in patients with inherited cutis laxa; and (3) review the *GGCX*-related phenotypes and associated dermatologic, ophthalmologic, hematologic, cardiac, and bone manifestations.

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17. CLINICAL SYMPTOMS AND A PATHOLOGICAL COMPARISON OF LYMPHOCYTIC THROMBOPHILIC ARTERITIS CUTANEOUS POLYARTERITIS NODOSA AND POLYARTERITIS NODOSA

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Background

Lymphocytic thrombophilic arteritis (LTA), cutaneous polyarteritis nodosa (cPN) and polyarteritis nodosa (PN) are pathologically medium-vessel vasculitides characterized by the inflammation of small to medium-size arteries with fibrinoid necrosis.

Objective

This study compares the clinicopathologic features of patients with LTA, cPN, or PN in order to assess when to start treatments and in order to find useful prognostic markers.

Methods

This retrospective study included all LTA, cPN and PN cases at a single center from 2003 to 2019 using prospectively collected clinical data.

Results

The study found 3 patients with LTA, 14 with cPN and 6 with PN. Clinically, cases of LTA were distinguished by a pattern of livedo racemose, which was non-infiltrative and asymptomatic. In contrast, cPN was associated with episodic features including nodules, pain and large inflammatory ulcers. PN was diagnosed with systemic symptoms along with the American College of Rheumatology (ACR) classification criteria. There was no case that each case prognose to two other different groups. None of the LTA cases showed any clinical changes. All the PN patients received intensive treatments within a half-year from disease onset. The ulceration of the cPN patients was associated with duration from disease onset to diagnosis. All 3 of the LTA cases showed the pathological findings of dense lymphocytic infiltrates without neutrophils, and some of the cPN and PN biopsy specimens also were without neutrophilic infiltrates.

Limitations

This was a single-center, retrospective study.

Conclusion

The combinations of skin symptoms and systemic findings at the first visit can be helpful for classifying patients into these three groups and for predicting the prognosis.

18. PERIORBITAL ECCHYMOSES IN A PATIENT WITH LUPUS ERYTHEMATOSUS

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A 72-year-old woman with a history of systemic, discoid, and subacute cutaneous lupus erythematosus presented with a one-month history of periorbital, pink-to-violaceous, edematous, ecchymotic plaques. She reported worsening of the eruption with topical corticosteroids and tacrolimus 0.1% ointment. Prior to presentation, her cutaneous lupus had been controlled with topical therapies in addition to prednisone 5-7.5 mg daily. Treatment with other systemic agents had been limited by the patient's multiple comorbidities, including antimalarial-induced ocular toxicity, dialysis-dependent end-stage renal disease, a history of *acute myeloid leukemia*, chemotherapy-induced neuropathy, past venous thromboembolism, diverticulitis, and post-colectomy diarrhea. At the time of presentation, her systemic lupus and prior attempts at treatment with lenalidomide had resulted in sustained severe thrombocytopenia with a platelet count of 28 K/ μ L (normal 150-450 K/ μ L). Physical examination demonstrated ecchymotic, crusted, edematous plaques with an eczematous appearance predominantly on the right upper and lower eyelids and cheek. Minimally active plaques of discoid lupus were also present on the upper back. The differential diagnosis for eyelid involvement included allergic contact dermatitis, discoid lupus, pemphigus erythematosus, and pinch purpura due to amyloidosis related to systemic lupus and/or hemodialysis. Given concern for contact dermatitis, topicals were held and the eruption improved on prednisone 20 mg daily but unfortunately flared upon tapering. A 3-mm punch biopsy of the right upper eyelid demonstrated a vacuolar interface dermatitis with follicular involvement consistent with discoid lupus. We hypothesize that the patient's severe thrombocytopenia resulted in bleeding into the eruption, giving it an ecchymotic appearance that obscured the morphology of classic discoid lupus. We present this case to (1) expand the differential diagnosis of periorbital ecchymoses to include discoid lupus in the setting of thrombocytopenia; (2) discuss discoid lupus as a contact dermatitis mimic; and (3) discuss novel treatment approaches to cutaneous lupus in a patient with multiple comorbidities.

Category: Clinical Case

Periorbital Ecchymoses in a Patient with Lupus Erythematosus

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Objectives

1. Report a case of discoid lupus erythematosus (DLE) manifesting as periorbital ecchymoses in the setting of thrombocytopenia.
2. Discuss DLE as a contact dermatitis mimic.
3. Present topical tofacitinib as a novel treatment for DLE in a patient with multiple comorbidities.

Case

- 72-year-old woman with systemic (SLE), discoid, and subacute cutaneous lupus erythematosus presented with an ecchymotic, edematous, eczematous periorbital eruption (Figure 1).
 - Refractory to topical steroids, tacrolimus 0.1% ointment, and prednisone 7.5 mg daily
- Differential diagnosis: contact dermatitis, DLE, pemphigus erythematosus, and pinch purpura due to amyloidosis.
- Punch biopsy was consistent with DLE (Figure 2).
- Improved on prednisone 20 mg daily but flared upon taper.
- Use of other systemic agents was limited by the patient's multiple comorbidities:
 - Antimalarial-induced ocular toxicity
 - Dialysis-dependent end-stage renal disease
 - History of acute myeloid leukemia
 - Chemotherapy-induced neuropathy
 - History of venous thromboembolism
 - Severe thrombocytopenia from SLE and lenalidomide (platelet count of 28 K/ μ L)
 - History of diverticulitis and diarrhea
- Tofacitinib 2% ointment BID (compounded by Chemistry Rx, Folcroft, PA) led to significant improvement after 1 month, with residual thrombocytopenia-related ecchymoses (Figure 3) and no side effects.

Figure 1: Ecchymotic, edematous, eczematous periorbital eruption in patient with SLE, DLE & SCLE



Figure 2: Skin biopsy showing vacuolar interface dermatitis with follicular involvement (400x)

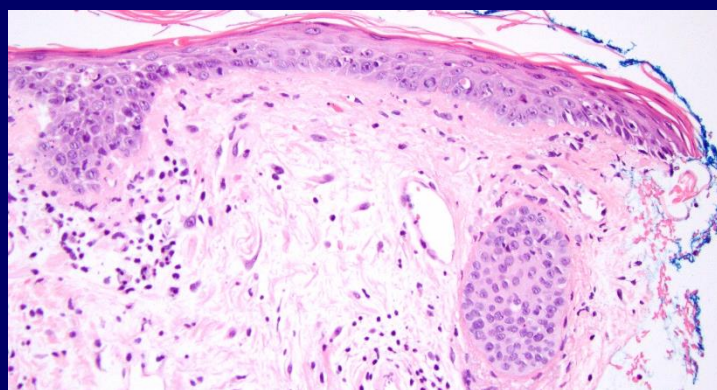


Figure 3: Significant improvement after 1 month of tofacitinib 2% ointment BID



Discussion

- In SLE patients with thrombocytopenia, cutaneous eruptions may appear ecchymotic. Thin skin, such as the eyelid in this case, is particularly susceptible.
 - Periorbital DLE may mimic contact dermatitis. Clinicopathologic correlation is key.
 - Although limited data suggest that Janus kinase (JAK) inhibition may improve cutaneous lupus,¹ treatment with a topical JAK inhibitor has not yet been reported. In this case, tofacitinib 2% ointment was both effective and well tolerated.
 - To our knowledge, this case represents the first report of DLE successfully treated with a topical JAK inhibitor. Tofacitinib 2% ointment may be a promising treatment option for DLE when traditional topical therapies are ineffective and systemic agents are contraindicated.
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19. SCARRING ALOPECIA: A RARE COMPLICATION OF LATE DERMATOMYOSITIS

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Dermatomyositis is an autoimmune inflammatory myopathy with a wide range of characteristic cutaneous manifestations. Scalp involvement in dermatomyositis includes diffuse, scaly dermatosis with erythema, atrophy, and nonscarring alopecia of the scalp. Nonscarring alopecia has become a well-known feature of scalp dermatomyositis, occurring in 33-43% of patients. Recently, the first study on specific histopathologic features of scalp dermatomyositis were examined in great detail, which revealed nonscarring alopecia consistent with chronic telogen effluvium. Scarring alopecia has not been described in scalp dermatomyositis. We present two patients found to have similar findings of diffuse erythema with crust and scale on the scalp with associated hair loss. Scalp biopsies revealed decreased hair follicles and sebaceous glands with dermal sclerosis and hyalinization, consistent with scarring alopecia. Of particular interest is that both patients had been diagnosed with dermatomyositis almost two decades prior to the time scalp biopsies were obtained. Teaching point: These cases report scarring alopecia as an unusual feature of scalp dermatomyositis which may be associated with late stage disease and highlight the need for further evaluation of an already debilitating disease that may also lead to irreversible hair loss.

Category: Dermatomyositis

SCARRING ALOPECIA: A RARE COMPLICATION OF LATE DERMATOMYOSITIS

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Introduction

Dermatomyositis (DM) is an autoimmune inflammatory myopathy with a wide range of characteristic cutaneous manifestations. Scalp involvement in dermatomyositis includes diffuse, scaly dermatosis with erythema, atrophy, and nonscarring alopecia of the scalp. Nonscarring alopecia has become a well-known feature of scalp dermatomyositis, occurring in 33-43% of patients.¹ The psoriasiform changes can be a debilitating feature that often cause burning and pruritis. Recently, the first study on specific histopathologic features of scalp dermatomyositis in patients with a disease duration of less than seven years were examined in great detail and revealed nonscarring alopecia consistent with chronic telogen effluvium.¹ Scarring alopecia has not been described in scalp dermatomyositis.

Presentation of Two Cases

Patient A:

52-year old male with a history of dermatomyositis for 17 years

Patient B:

80-year old female with a history of dermatomyositis for 30+ years

- Both presented with symptoms of itching and hair loss for several years.
- Examinations of both patients' scalps revealed diffuse erythema with crust and scale, with associated hair loss.
- Scalp biopsies revealed decreased hair follicles and sebaceous glands with dermal sclerosis and hyalinization, consistent with scarring alopecia.



Figure 1 (top). Patient A: Site of biopsy on left parietal scalp and diffuse alopecia, erythema, and scaling.

Figure 2 (bottom). Patient B: Site of biopsy on left temporal scalp and diffuse alopecia, erythema, and scaling.



Discussion

Alopecia is often classified as scarring (cicatricial) or nonscarring (noncicatricial). Scarring alopecia occurs with chronic discoid lupus erythematosus (DLE), lichen planopilaris (LPP), as well as several non-autoimmune disorders.² Scarring results from destruction of the hair follicle by inflammation predominantly around the permanent portion of the follicle (stem cells of the bulge and the infundibulum) resulting in permanent hair loss.²

Histologically, scarring alopecia is characterized by dermal scarring, along with absent or reduced hair follicles and a reduced number of erector pili muscles.^{2,3} In contrast, the nonscarring alopecia classically associated with dermatomyositis features telangiectasia, mucin, eosinophils and acrosyringeal hypergranulosis with hyperkeratosis.¹

Both patients had features consistent with scarring alopecia- an unexpected finding in scalp DM. Neither patient had clinical or laboratory evidence of an overlapping disease such as DLE or LPP to cause scarring.

Follicular dropout has been found in one patient with scalp DM, however no other reports of scarring alopecia with scalp DM exist.¹ No studies have focused on the histopathologic features of scalp dermatomyositis beyond seven years of disease duration. Our patients were diagnosed with DM more than 17 years prior to discovering scarring alopecia, suggesting that duration of disease may be a factor in the development of scarring alopecia. Further, these patients' biopsies were evaluated with by both vertical and horizontal sections, which we believe should be obtained for complete evaluation of other suspected cases of scarring alopecia in scalp DM.

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20. INFlixIMAB-INDUCED BULLOUS LEUKOCYTOCLASTIC VASCULITIS

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A 42 year old African American man with a history of severe refractory hidradenitis suppurativa presented with a generalized painful, blistering rash that developed one week after his first infliximab infusion at an increased dose (following uneventful stable dosing for one year). Physical examination revealed diffuse pink papules, vesicles, and bullae on an erythematous base, some of which appeared purpuric. Punch biopsy of the forearm revealed perivascular inflammation extending into the deep dermis, along with abundant papillary dermal edema and neutrophils. The small vessels appeared ragged with fibrinoid necrosis, consistent with bullous leukocytoclastic vasculitis (LCV). Direct immunofluorescence was negative. Complete blood count and comprehensive metabolic panel were unchanged from the patient's baseline, and serum protein electrophoresis revealed no apparent monoclonal protein. Infliximab was discontinued, and a prednisone taper was initiated with prompt resolution of the eruption. LCV is a small-vessel vasculitis involving dermal postcapillary venules. It typically manifests as palpable purpura in dependent areas, though bullae and ulcers may also develop. A thorough diagnostic workup is warranted to evaluate for systemic vasculitis or cutaneous vasculitis secondary to another etiology, including infection, malignancy, or medication reaction. Medications are implicated in 10% of cases of LCV, the most common of which include antibiotics, NSAIDs, thiazides, and TNF alpha inhibitors. Though the patient reported here recovered quite quickly, cases of vasculitis related to TNF alpha inhibitors frequently demonstrate a longer lag time in both initial onset as well as clearance upon discontinuing the medication. Teaching point: Understanding the often delayed presentation and resolution in cases of TNF alpha inhibitor-induced vasculitis is critical for both initial diagnosis (given the immense variety of potential etiologies), as well as patient counseling on prognosis.

Category: Clinical Case

INFLIXIMAB-INDUCED BULLOUS LEUKOCYTOCLASTIC VASCULITIS



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CLINICAL SYNOPSIS

A 42 year old African American man with a history of severe, refractory hidradenitis suppurativa presented to the dermatology clinic with a generalized painful, blistering rash approximately one week after his first infliximab infusion at an increased dose, following uneventful stable dosing for one year. He denied fevers or chills, but noted he did not “feel like himself.” Further, he denied any genital, ocular, or oral symptoms. Given severity of disease, he was admitted to the hospital, and a punch biopsy of the forearm was performed.

PHYSICAL EXAM

On the forearms, thighs, buttocks, and abdomen, there were pink papules, vesicles, and bullae on erythematous bases, some of which had associated erosions and weeping of serosanguinous fluid. No oral mucosal involvement was noted.

DIFFERENTIAL

Diagnostic considerations included erythema multiforme, Stevens-Johnson Syndrome, bullous drug eruption, bullous vasculitis, drug-induced bullous lupus, disseminated herpes zoster, atypical coxsackie, and bullous pemphigoid.

LABORATORY DATA

Punch biopsy of the forearm revealed perivascular inflammation extending into the deep dermis, along with papillary dermal edema and neutrophils. The small vessels appeared ragged with fibrinoid necrosis, consistent with a diagnosis of bullous leukocytoclastic vasculitis (LCV). Direct immunofluorescence was negative. Complete blood count, comprehensive metabolic panel, and urinalysis were unchanged from baseline, and serum protein electrophoresis revealed no apparent monoclonal protein. Complement, ANA and ANCA studies were negative.

CASE FOLLOW-UP

The patient was started on a prolonged taper of prednisone, with resolution noted at about four weeks. His hidradenitis suppurativa has flared in the interim, with treatment focus now shifting to ustekinumab injections.



DISCUSSION

LCV is a small-vessel vasculitis that typically manifests as palpable purpura in dependent areas, though some cases progress to bullae and ulcers. A thorough diagnostic workup is warranted to evaluate for systemic vasculitis or cutaneous vasculitis secondary to another etiology, a broad differential which includes infection, malignancy, connective tissue disease, and drug-associated variants. Medications are implicated in approximately 10% of cases, most commonly antibiotics, NSAIDs, thiazides, oral contraceptives, and TNF-alpha inhibitors.¹

LCV is the most prevalent of a litany of autoimmune diseases that has been linked to TNF-alpha inhibitors.² Given the occasional concomitant development of anti-drug antibodies, there has been speculation regarding the possibility of a contributory hypersensitivity phenomenon.³ The clinical spectrum of TNF-alpha inhibitor-associated vasculitis is extensive, ranging from a benign cutaneous variant originating at the injection site to exuberant systemic disease.⁴ The mainstay of treatment is discontinuation of the offending medication, though diffuse or refractory cases may necessitate prednisone or other immunomodulators.⁵ Importantly, patients with TNF-alpha inhibitor-associated vasculitis regularly demonstrate both a prolonged mean lag time to disease onset (34.5 months and 7 months in two reported cohorts, respectively), as well as mean time to resolution upon discontinuation (7 months).^{2,3}

Understanding the unique clinical findings and natural history of cases of TNF-alpha inhibitor-associated vasculitis is critical for both initial diagnosis and patient counseling on prognosis.

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21. UNDERSTANDING UNMET NEEDS FOR PSORIASIS PATIENTS

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Abstract: Psoriasis is a prevalent, chronic, systemic inflammatory disease that commonly affects the skin.¹ Psoriasis can greatly impact quality of life, impairing social functioning and potentially causing social stigmatization.^{1, 2, 3} While the introduction of targeted immunomodulatory therapies has improved treatment outcomes for psoriasis, treatment gaps may still exist.⁴ The aim of this investigation was to survey patients with psoriasis to identify their unmet treatment needs. Participants aged 18 years or older, with an Amazon Mechanical Turk (online survey platform) account, who reported diagnosis of psoriasis and correctly answered an attention check question at the end of the survey were included. Results were analyzed using descriptive and inferential statistics, as appropriate. Of 1,077 respondents, 567 reported diagnosis of psoriasis, 435 of whom passed the attention check question. Of these respondents, 50% were male; 58% had a bachelor's degree; the majority made between \$50,000 and \$74,999 per year; most had private insurance and were between 31-40 years of age. In terms of disease severity, 51.9% claimed to have mild psoriasis, 42.0% moderate, and 6.0% severe. Only 73.3% of respondents reported currently receiving any form of treatment. In terms of satisfaction, 49.7% of respondents were mostly or completely satisfied with treatment, while 24.9% were not at all or slightly satisfied. When asked with what treatment(s) they were most satisfied, respondents noted topical (56.5%), oral (47.8%), and injectable treatments (22.1%), and 73.7% of respondents slightly or strongly agreed that there should be more cost-effective options. When asked what was missing, most respondents suggested better affordable topical and oral treatment that works faster and does not require as frequent of use. Based on our survey study, we believe there is space for improved topicals or orals that work quickly, and are inexpensive, all while helping patients manage their psoriasis symptoms.

Category: Miscellaneous features and types of rheumatic –dermatologic skin disease

UNDERSTANDING UNMET NEEDS FOR PSORIASIS PATIENTS

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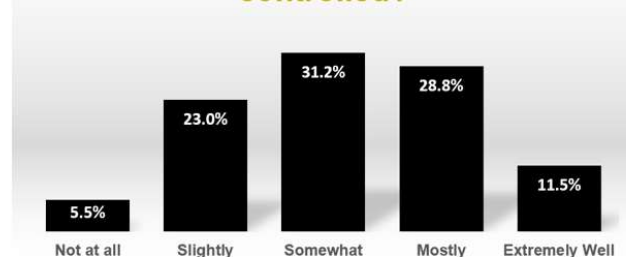
WHAT ARE THE UNMET TREATMENT NEEDS FOR PSORIASIS?

Psoriasis is a chronic inflammatory disease affecting the skin which can greatly impact quality of life. There have been many advances in psoriasis treatments that have greatly improved outcomes for patients. However, it is possible gaps in treatment still exist. The goal of this study was to survey patients with psoriasis about their specific unmet treatment needs, with the aim of identifying overarching gaps in psoriasis treatment.

METHODS We distributed our REDCap survey through the online survey platform, Amazon Mechanical Turk, to participants 18 years and older. A total of 1,345 survey responses were collected. Responses in which participants did not report a diagnosis of psoriasis, did not complete the survey, and/or failed to appropriately answer an attention check question were eliminated, which left 417 remaining survey responses. Survey results were analyzed with descriptive and inferential statistics.

RESULTS Of the respondents, 51.1% identified as female, 48.2% as male; 39.3% within age range of 31-40; 59.5% as having a Bachelor's degree. Only 51.1% reported some familiarity with medical terminology. Most (54.4%) slightly to completely agreed psoriasis decreases their self confidence; 42.7% slightly to completely agreed that

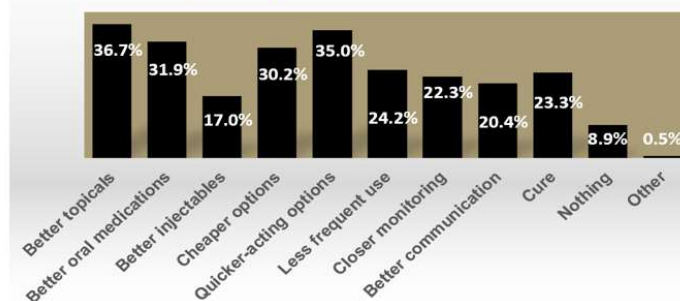
How well do you feel that your psoriasis is currently controlled?



psoriasis has kept them from interacting with others; 43.4% slightly to completely agreed that psoriasis has negatively affected their personal lives and day-to-day lives. A majority (74.8%) of respondents reported having received some form of psoriasis treatment. When given the choice to select all that apply, respondents reported they are most satisfied with topical treatments (59.5%), followed by oral (46.0%) and then injectable treatments (19.9%). Several reported using other forms of treatment, including UV therapy (5) and alternative therapies (13), which included diet, stress management, sleep, homeopathic and Ayurvedic remedies, THC, and CBD. We received several comments in addition to listed options for what respondents felt was missing from their treatment:

"I think what is missing is something that will make me feel good every day and something that will make it less visible."

What do you believe is missing from your psoriasis treatment?



"I don't have a doctor because the US health care system makes doctor's visits prohibitively expensive and non-transparent in pricing if you do not have insurance."

"Better understanding of the disease."

DISCUSSION Many of our respondents reported decreased quality of life from their psoriasis, and less than half reported good control of their disease, reflecting a need for improved treatments. Survey responses suggest better topical and oral medications that are quicker acting and more cost-effective would be most valuable in improving the currently available treatment options. Free responses answers might suggest that topicals with the additional benefit of camouflage would be welcomed. Lifestyle medicine also appears to be an important part of the discussion in psoriasis management. Specifically, some participants reported stress management,

exercise, sleep, and dietary modification help them better manage their psoriasis. Several also reported "a good doctor" as helpful to their psoriasis management.

Advocacy in the U.S. health system and increasing awareness may also improve patient outcome, given that not all patients can afford specialist care. Ultimately, price, quality, strong patient-doctor communication, and adjuncts to current therapy such as lifestyle medicine can help make strides in psoriasis treatment with the goal of lessening the burden psoriasis has on affected patients' lives.

CONCLUSION Psoriasis remains a burden to patients that can greatly impact their quality of life. Filling gaps in psoriasis treatment – such as greater efficacy and efficiency, and lower cost and availability of topical and oral agents – can hopefully lead to better health outcomes for psoriasis patients and diminish this burden.

22. AN ATYPICAL PRESENTATION OF LUPUS PANNICULITIS MASQUERADING AS ERYTHEMA NODOSUM

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Abstract:

A 29-year-old female with a longstanding history of erythema nodosum (EN) presented to our connective tissue disease clinic for persistent painful lower leg nodules. She was first diagnosed with EN as a teenager on biopsy at an outside institution. Extensive outside workup was negative for underlying causes including sarcoidosis, vasculitis, and infection. She continued to have multiple recurrent outbreaks of tender lower extremity nodules accompanied by arthralgias. She also endorsed new photosensitivity, oral ulcers and intermittent facial rash. Nodules responded well to short prednisone courses but recurred on discontinuation. She was unable to tolerate dapsone and did not have satisfactory control with colchicine or full dose methotrexate. Exam revealed several tender, firm, non-ulcerated subcutaneous nodules with minimal overlying erythema on her bilateral shins and calf. CBC, ANA, dsDNA, and complements were unremarkable. Because nodules were persistent despite multiple therapies, repeat punch biopsy was performed. Histopathology demonstrated lobular panniculitis with lymphocytic infiltrate, mucinous eccrine coils, and hyaline necrosis of subcutaneous fat, consistent with lupus panniculitis without discoid lupus erythematosus (DLE). Lupus panniculitis is a rare form of chronic cutaneous lupus erythematosus classically presenting with indurated, tender nodules and plaques on the proximal extremities, breasts, buttocks, and face. Isolated nodules on the distal lower extremities including the shin and calf in this patient are very rare and more typical of EN. Re-biopsy was ultimately required for diagnostic clarification given refractory symptoms. Lupus panniculitis can occur independently of systemic lupus erythematosus or DLE, as in this case. Though ANA is often positive, a negative result does not exclude the diagnosis. Teaching points: This case (I) demonstrates an uncommon presentation of lupus panniculitis on the distal lower extremities, mimicking EN, (II) highlights the differential diagnosis of inflammatory leg nodules, and (III) emphasizes the role of biopsy to distinguish between panniculitides in atypical, refractory cases.

Category: Clinical case



AN ATYPICAL PRESENTATION OF LUPUS PANNICULITIS MASQUERADING AS ERYTHEMA NODOSUM



Lisa N Guo, BS^{1,2}, Stella X Chen, MD², Daniel R Mazori, MD², Michelle S Min, MD, MS², Bina Kassamali, BA^{1,2}, Gabriela A Cobos, MD², Joseph F Merola, MD, MMSc², Ruth Ann Vleugels, MD, MPH², Mohammadreza Pakyari, MD, PhD³, Alvaro C Laga, MD, MMSc³, Avery LaChance, MD, MPH²

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Introduction

- Lupus panniculitis is a rare form of chronic cutaneous lupus erythematosus¹
- Both erythema nodosum and lupus panniculitis are characterized by inflammation of the subcutaneous fat^{1,2}

Case Presentation

HPI

- A 29-year-old female with a longstanding history of erythema nodosum (EN) presented to connective tissue disease clinic for persistent painful lower leg nodules
- First diagnosed with EN as a teenager on biopsy at an outside institution
- Previous workup negative for sarcoidosis, vasculitis, and infection
- Nodules improved with pregnancy but later recurred
- Continued to have multiple recurrent outbreaks of tender lower extremity nodules despite colchicine and full dose PO and SQ methotrexate, unable to tolerate dapsone
- Nodules accompanied by joint pain
- Lesions responded well to short courses of systemic steroids but recurred on discontinuation

ROS: + fatigue, + arthralgias, ? photosensitivity, ? facial rash, - fevers, - weight loss, - chest pain, - SOB, - diarrhea

Medications:

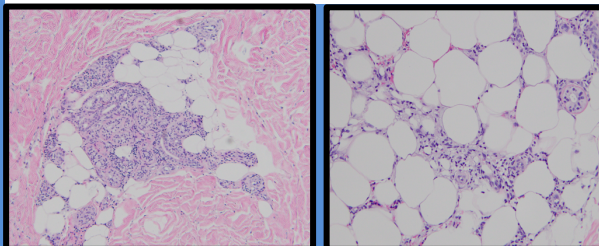
- SQ methotrexate 25 mg weekly, folic acid, NSAIDs

Workup

- CBC, BUN/Cr, LFTs within normal limits
- ANA, - dsDNA, C3 and C4 within normal limits
- Given persistence of nodules despite treatment, repeat punch biopsy was performed



- Tender, violaceous, indurated subcutaneous nodules on bilateral shins and calves, no ulcerations



Punch biopsy of right lower extremity nodule:

- H&E stain demonstrating lobular panniculitis with lymphocytic infiltrate, hyaline necrosis of subcutaneous fat, and mucin deposition in eccrine glands consistent with lupus panniculitis
- Negative acid-fast stain, fungal, and tissue cultures (not pictured)
- No evidence of subcutaneous panniculitis-like T-cell lymphoma

Course

- Started on hydroxychloroquine 200 mg BID
- Continued on SQ methotrexate 25 mg weekly
- Follow-up planned with rheumatology given other symptoms

Discussion

- Lupus panniculitis classically presents with indurated, tender nodules and plaques on the proximal extremities, breast, buttocks, and face³
- Isolated distal lower extremity nodules are very rare in lupus panniculitis and can be mistaken for EN, as the distribution is more typical of EN⁴
- EN generally spontaneously regresses, and persistence despite immunosuppression may merit biopsy or re-biopsy to assess for other process
- EN and lupus panniculitis can be differentiated based on histopathology, with lupus panniculitis demonstrating lymphocytic infiltrate of the fat lobules rather than the septa as well as hyaline necrosis of the fat³

	Erythema Nodosum	Lupus Panniculitis
Lesion	Tender nodules + plaques	Tender nodules + plaques
Typical distribution	Pretibial region	Proximal extremities, breast, buttocks, face
Histopathology	Septal panniculitis	Lobular panniculitis
Management	Compression and elevation, NSAIDs, colchicine, address underlying cause	Antimalarials first line, dapsone, thalidomide, methotrexate if refractory, evaluate for SLE

Teaching Points

- Though rare, lupus panniculitis can present on the distal lower extremities
- Consider lupus panniculitis in the differential diagnosis for persistent and refractory inflammatory lower leg nodules
- Biopsy can help distinguish between panniculitides in atypical cases

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23. UNDERSTANDING PATIENT VIEWS ON THE USE OF BIOLOGICS AMID THE COVID-19 PANDEMIC

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Abstract

Background: With increasing fear of COVID-19, psoriasis patients might question their use of biologics. We aim to evaluate patients' views on biologic use for psoriasis during the COVID-19 pandemic.

Methods: We surveyed 281 individuals currently taking a biologic medication for their psoriasis. Participants were asked to evaluate the sources they used for information regarding safety of biologic use during the COVID-19 pandemic and accuracy of those sources. We also evaluated their understanding regarding biologic use during the COVID-19 pandemic on a scale from one-to-five, with one demonstrating no understanding and five demonstrating advanced understanding. Understanding regarding biologic use in various COVID-19 scenarios was also evaluated through yes or no and true or false type questions. Descriptive statistics and linear regression were used to analyze data.

Results: Participants reported moderate understanding of the risks and benefits of biologics for psoriasis during the COVID-19 pandemic (mean: 2.95 ± 1.01). Participants with more familiarity with medical terminology exhibited a higher understanding (Beta = 0.28, $p < 0.0001$). 56.9% of participants believed stopping their biologic or reducing dosage would be appropriate regardless of COVID-19 status. Participants most often used family and friends to learn more about biologic safety during COVID-19 ($n = 145$, 51.6%). However, participants found their dermatologist to be the most accurate source of information ($n = 76$, 27%). Social media – such as Instagram, Facebook, and Tik Tok – were moderately used ($n = 93$, 33.1%).

Limitations: The use of an English survey and Amazon Mechanical Turk precludes certain populations from this study.

Conclusion: Currently, many individuals with psoriasis taking biologics lack full on biologic use during the COVID-19 pandemic. Focusing on specific modes of information dispersal – such as social media and news outlets – potentially could help provide this group with advice needed to make well-informed decisions regarding their health.

Category: Miscellaneous features and types of rheumatic–dermatologic skin disease

Understanding Views of Patients on Biologics for Psoriasis Amid the COVID-19 Pandemic



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BACKGROUND

With increasing fear of COVID-19, psoriasis patients might question their use of biologics. We aim to evaluate patients' views on the safety of biologic use for psoriasis during the COVID-19 pandemic.

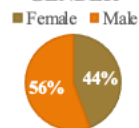
METHODS

We surveyed 281 individuals currently taking a biologic medication for their psoriasis. Participants were asked to evaluate the sources they used for information regarding safety of biologic use during the COVID-19 pandemic and accuracy of those sources. We also evaluated their understanding regarding biologic use during the COVID-19 pandemic on a scale from one-to-five, with one demonstrating no understanding and five demonstrating advanced understanding. Understanding regarding biologic use in various COVID-19 scenarios was also evaluated through yes or no and true or false type questions. Descriptive statistics and linear regression were used to analyze data.

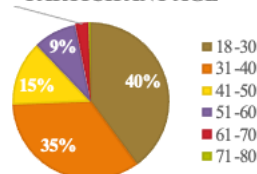
RESULTS

281 participants met study criteria of being 18 years or older, having a diagnosis of psoriasis, and currently taking a biologic for psoriasis. Most participants identified as male (55.5%); 87.9% were age 50 or younger; 98.6% had obtained at least a high school diploma or GED; 49.5% identified their race as Caucasian; and 34.4% identified their ethnicity as Hispanic or Latino. Most participants reported being at least "somewhat familiar" with medical terminology.

PARTICIPANT GENDER



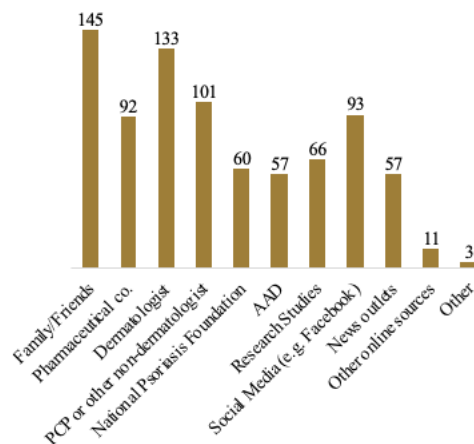
PARTICIPANT AGE



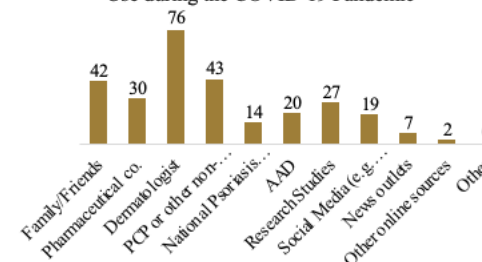
RESULTS

When rating on a scale from 1 to 5, with 1 representing "no understanding" and 5 "complete understanding," participants reported moderate understanding of the risks and benefits of biologics for psoriasis during the COVID-19 pandemic (mean: 2.95 ± 1.01). 52.7% of participants reported stopping their biologic and 56.9% reported reducing dosage would be appropriate regardless of whether they tested positive or negative for COVID-19. Participants most often used family and friends to learn more about biologic safety during COVID-19 ($n = 145$, 51.6%). However, participants found their dermatologist to be the most accurate source of information ($n = 76$, 27%). Social media – such as Instagram, Facebook, and Tik Tok – were moderately used ($n = 93$, 33.1%).

Number of Participants Who Used Source for Information on Biologic Use during the COVID-19 Pandemic

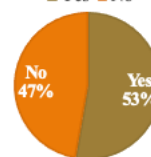


Number of Participants Who Rated Most Accurate Source for Information on Biologic Use during the COVID-19 Pandemic



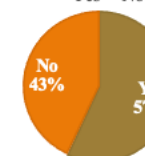
WOULD YOU STOP YOUR BIOLOGIC IN SETTING OF COVID-19?

■ Yes ■ No



WOULD YOU REDUCE YOUR BIOLOGIC DOSAGE IN SETTING OF COVID-19?

■ Yes ■ No



LIMITATIONS

The use of an English survey and Amazon Mechanical Turk precludes certain populations from this study.

CONCLUSION

Currently, many individuals with psoriasis taking biologics lack full on biologic use during the COVID-19 pandemic. Focusing on specific modes of information dispersal – such as social media and news outlets – potentially could help provide this group with advice needed to make well-informed decisions regarding their health.

24. SKIN RASH IN A PATIENT WITH MYOSITIS AND BREAST CANCER

Dilli Ram Poudel¹; Rashmi Dhital²; Preethi Thomas¹

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We report a clinical case of a 45-year-old premenopausal female diagnosed with stage IIB invasive ductal carcinoma of the left breast and inflammatory myositis. She started chemotherapy (adriamycin & taxoterene) on December 2018. In February 2019 started atorvastatin and in March developed myopathic symptoms with a creatine kinase (CK) of 1972. No skin rashes were noted then. electromyography and magnetic resonance imaging both showed myositis. Statins were discontinued and patient was started on high dose prednisone, her CKs and symptoms improved. After going through mastectomy and radiation, she underwent adjuvant chemotherapy with capecitabine (an oral prodrug of 5-fluorouracil), commonly used for solid tumor malignancies) on 8/25/19. Soon after that she developed hyperpigmented flat papules on the dorsum of the metacarpophalangeal and interphalangeal joints as well as palmar aspect. Given her myositis history, the rash was thought to be gottron's papules and a diagnosis of dermatomyositis was entertained. However, within next few months, she came off of her adjuvant chemotherapy and the discoloration improved close to baseline (Figure, before and after chemotherapy). Capecitabine-induced dermatologic reactions have been reported. Given the wide use of capecitabine in many malignancies, it is important to recognize this drug related skin rash and avoid disruptions in therapy.

Category: Clinical Case

Teaching point:

1. Differential diagnosis of gottron's like lesions in a patient on capecitabine chemotherapy and overlapping myositis.

Skin Rash in a Patient With Myositis And Breast Cancer

Dilli Ram Poudel, MD¹; Rashmi Dhital, MD²; Preethi Thomas, MD¹

¹Division of Rheumatology, University of Pennsylvania, Philadelphia, PA; ²Department of Internal Medicine, Reading Hospital, Tower Health System, Reading, PA

Case

- 45-year-old premenopausal female diagnosed with stage IIB invasive ductal carcinoma of the left breast
- December 2018: chemotherapy (adriamycin & taxotere) started
- February 2019: atorvastatin started for cardioprotection
- March 2019: myopathic symptoms (proximal bilateral lower extremity weakness) with a creatine kinase (CK) of 1972
- No skin rashes were noted then
- EMG and MRI evaluation consistent with myositis
- April 2019: Statins discontinued. High dose glucocorticoids started to treat her inflammatory myositis
- CKs and symptoms improved
- August 2019: adjuvant chemotherapy started with capecitabine
- Soon after: noted hyperpigmented flat papules on the dorsum of the metacarpophalangeal and interphalangeal joints as well as palmar aspect (Figure, Panel "Before").
- Given her myositis history, the rash was thought to be Gottron's papules and a diagnosis of dermatomyositis was entertained.
- 2-3 months later: chemotherapy completed. Skin pigmentation improved towards baseline (Figure, Panel "After")



Discussion

- Capecitabine is an antineoplastic agent (a prodrug of active metabolite 5-fluorouracil (5-FU) used for the treatment of patients with metastatic solid tumors (breast and colon)
- It has several side effects, most common of which is Hand-Foot syndrome (HFS)
- Less frequently it is associated with hyperpigmentation - involving the hands and feet and, less commonly, the mucous membranes of the mouth.

Conclusion

- Given the common use of capecitabine in many malignancies, it is important to recognize this drug related skin rash and avoid disruptions in therapy.

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25. TUMID LUPUS ERYTHEMATOSUS (TLE) AND SYSTEMIC LUPUS ERYTHEMATOSUS (SLE): A RARE COEXISTENCE

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A 30-year-old female of Burmese descent with history of hypothyroidism and biopsy-proven tumid lupus erythematosus presented to the emergency department with cough, shortness of breath, and lower extremity edema. On examination, patient had jugular venous distention, cervical lymphadenopathy, diminished bibasilar breath sounds, trace bilateral ankle edema, and smooth, nonscarring pink-brown plaques along the post-auricular scalp line.

Serologic workup revealed pancytopenia, positive direct antiglobulin test, elevated brain natriuretic peptide, elevated ANA titers 1:2560 in homogenous pattern, positive antibodies to double stranded DNA and ribonucleoprotein, elevated erythrocyte sedimentation rate, and low complement levels. Imaging of neck and chest showed pericardial effusion, bilateral pleural effusions, and diffuse lymphadenopathy. Cervical lymph node biopsy demonstrated reactive follicular and paracortical hyperplasia. Transthoracic echocardiogram revealed elevated estimated pulmonary artery systolic pressures, with right heart cardiac catheterization confirming pulmonary artery hypertension. Diagnosis of SLE was confirmed, and patient was discharged on hydroxychloroquine and prednisone taper.

TLE is a rare variant of cutaneous lupus erythematosus which has been infrequently associated with positive ANA titers, extractable nuclear antigen antibodies, and diagnosis of SLE, as in this case. The association between TLE and SLE has important implications on management of patients with TLE. TLE has a relatively benign clinical course and prognosis; however, SLE, which can involve numerous organ systems, confers a three-fold increase in mortality rate compared to age-matched general population.^{1,2} Furthermore, SLE can inflict significant morbidity, diminishing quality of life and imposing substantial physical, mental, emotional, and financial burdens.^{2,3} Patients with TLE and other additional risk factors for SLE development – African Americans, women ages 15-55, coexisting autoimmune disease, SLE in a first-degree family member – can benefit from SLE screening, such as complete blood count, urinalysis, ANA and other nuclear antigen antibodies testing.⁴ Therefore, knowledge about the TLE-SLE association may facilitate earlier detection and treatment of SLE, leading to better health outcomes.

Category: Clinical Case, Lupus

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TUMID LUPUS ERYTHEMATOSUS (TLE) AND SYSTEMIC LUPUS ERYTHEMATOSUS (SLE): A RARE COEXISTENCE

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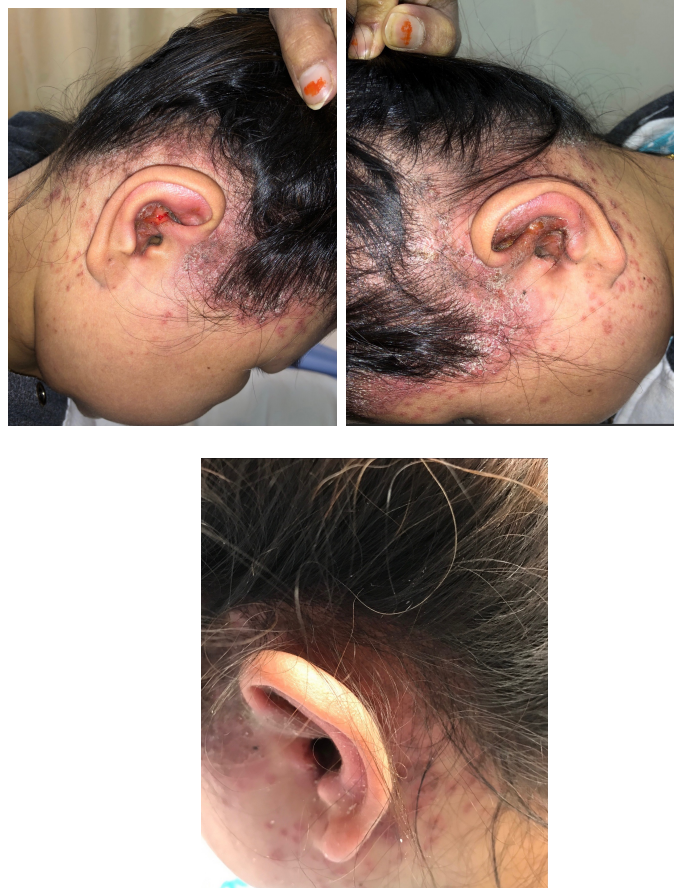
INTRODUCTION

- TLE is a rare variant of chronic cutaneous lupus erythematosus (CLE) which has been infrequently associated with positive ANA titers, extractable nuclear antigen antibodies, or diagnosis of systemic lupus erythematosus, as demonstrated in this case. The association between

CASE

- 30-year-old female of Burmese descent with history of hypothyroidism and biopsy-proven tumid lupus erythematosus presented to the emergency department with cough, shortness of breath, and lower extremity edema
- On examination, patient had jugular venous distention, cervical lymphadenopathy, diminished breath sounds at lung bases, trace bilateral ankle edema, and smooth, nonscarring pink-brown plaques along the post-auricular scalp line
- Serologic workup revealed pancytopenia, positive direct antiglobulin test, elevated brain natriuretic peptide (BNP), elevated ANA titers 1:2560 in a homogenous pattern, positive antibodies to double stranded DNA (dsDNA) and ribonucleoprotein (RNP), elevated erythrocyte sedimentation rate (ESR), and low complement levels
- Imaging of the neck and chest showed pericardial effusion, bilateral pleural effusions, and diffuse lymphadenopathy
- Cervical lymph node biopsy demonstrated reactive follicular and paracortical hyperplasia

CLINICAL IMAGES



CASE

- Transthoracic echocardiogram revealed elevated estimated pulmonary artery systolic pressures, with right heart cardiac catheterization confirming pulmonary artery hypertension (PAH)

- Diagnosis of SLE was confirmed and patient was discharged on hydroxychloroquine and prednisone taper.

DISCUSSION

- TLE and SLE has important implications on management of patients with TLE
- TLE has a relatively benign clinical course and prognosis; however, SLE, which can involve numerous organ systems, confers a three-fold increase in mortality rate compared to the age-matched general population
- Furthermore, SLE can inflict significant morbidity, diminishing quality of life and imposing substantial physical, mental, emotional, and financial burdens
- Patients with TLE and other additional risk factors for SLE development – African Americans, women ages 15-55, another autoimmune disease, SLE in a first-degree family member – can benefit from SLE screening, such as complete blood count, urinalysis, ANA and other nuclear antigen antibodies testing
- Therefore, knowledge about the TLE-SLE association can lead to earlier detection and treatment of SLE, leading to better health outcomes.

Dermatomyositis

26. TYPE I AND II INTERFERON SIGNALING DIFFERENTIALLY ASSOCIATED WITH HISTOPATHOLOGIC FINDINGS IN DERMATOMYOSITIS SKIN

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Upregulation of interferon (IFN) signaling is well documented in the skin, as well as blood and muscle of dermatomyositis (DM) patients. However, it is unclear if IFN signaling is related to the pathologic features commonly found in DM skin biopsies. Here, we investigate the association of Type I and II IFN gene signatures with cardinal histologic findings seen in DM skin to better understand the contribution of IFN signaling to key pathological features of DM. Histological staining and RNA sequencing were performed on 113 skin biopsies from 99 patients with DM. Biopsies were scored for severity (low vs. high) of fifteen histopathologic features by a blinded dermatopathologist. Genes selectively induced by IFN-alpha or IFN-gamma¹ were selected to represent Type I (IFN1) and II (IFN2) IFN signaling gene sets. IFN1 and IFN2 scores were then calculated using the average expression values for the genes in each gene set. In univariate analysis, perivascular inflammation (IFN1 p=0.0066, IFN2 p<0.0001), extravasated red blood cells (p=0.0349, p=0.0089), dyskeratosis (p<0.0001 for both), and basal vacuolization (p<0.0001 for both) were associated with higher IFN1 and IFN2 scores. Mucin deposition was only associated with a higher IFN1 score (p=0.002). Periadnexal inflammation (p=0.0498) and neutrophils (p=0.0137) were only associated with a higher IFN2 score. Parakeratosis was associated with a lower IFN1 score (p=0.0381). Our results suggest that IFN dysregulation is closely related to DM skin pathology. In addition, Type I and II IFN signaling pathways may be associated with distinct pathologic processes in DM skin, which can have important implications for future targeted treatments in DM.

¹J.C. Hall et al., Proc Natl Acad Sci USA 109(43):17609-14, 2012, doi:10.1073/pnas.1209724109

27. IDENTIFICATION OF IL31_IL4+ mDCs IN DERMATOMYOSITIS AS POSSIBLE CONTRIBUTORS TO ITCH

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Background:

Dermatomyositis (DM) is a systemic autoimmune disease affecting the muscles and skin. Itch is frequently present in these patients and can significantly affect the quality of life. Previous studies have used single or double staining to characterize the itch related cytokines IL31 and IL4 in DM CD4 cells. Here we implemented image mass cytometry (IMC) and took an unbiased approach to identify possible cellular sources of these cytokines and relevance to patient reported itch.

Methods:

We evaluated skin biopsies from 10 DM patients and 5 healthy controls (HC). Biopsies were stained with a cocktail of the 37 metal labeled antibodies and imaged using the Hyperion Imaging System. Cell were segmented in Visiopharm and per cell mean pixel intensity analysis was performed using histoCAT. The Phenograph algorithm was used to cluster cells and FlowJo to refine clusters. In situ hybridization (ISH) using IL4, IL31, and CD11C mRNA probes was performed to confirm results.

Results:

We found colocalization of IL4 and IL31 in mDCs via IMC and confirmed the expression pattern using ISH. IL4+ and IL31+ mDCs were found to correlate with a Skindex-29 itch question (IL4+: $r=0.6547$, $p=0.0448$; IL31+: $r=0.7310$, $p=0.0194$). The overall IL31 protein also correlated with IL4 protein ($r=0.8774$, $p=0.0016$). At a single cell level, the overall IL31 protein correlated with mDC IL31 ($r=0.7915$, $p=0.0091$) and mDC IL4 ($r=0.6831$, $p=0.0388$). Also at a cellular level, mDC production of IL31 and IL4 correlated positively ($r=0.8075$, $p=0.0047$).

Conclusion:

The mDCs in DM produce IL4 and IL31 and correlate with patient reported pruritus. A synergistic effect between IL4 and IL31 may exist in mDCs. These cells represent a possible novel target for reducing itch in DM patients.

28. HERBAL SUPPLEMENT SPIRULINA STIMULATES INFLAMMATORY CYTOKINE PRODUCTION VIA TOLL LIKE RECEPTOR-4 ACTIVATION IN-VITRO IN DERMATOMYOSITIS PATIENTS

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Spirulina is a popular herbal supplement that stimulates the immune system, as determined by in-vitro and in-vivo studies. Our recent epidemiologic data suggest that Spirulina is associated with the onset or exacerbation of pre-existing autoimmune skin diseases, such as Dermatomyositis (DM). The purpose of this study was to investigate its immunostimulatory effects in-vitro. PBMCs were isolated from DM and healthy controls and stimulated with increasing concentrations of Spirulina supernatant (0, 0.3, and 1 mg/ml) or with Spirulina supernatant and different pathway inhibitors for 18 hours. Spirulina dose-dependently increases PBMC production of IFN β and IFN γ . Spirulina also increases PBMC production of TNF α , with peak levels with 0.3 mg/ml Spirulina stimulation. Follow-up experiments examined the effects of STING, TLR2/TLR4, TBK1, or TLR4 inhibition on PBMC production of TNF α or IFN γ . With 0.3 mg/ml Spirulina stimulation, TNF α decreased from mean (standard error of mean) 1829 (243.47) pg/ml to 384.6 (149.27), 410.7 (73.43), and 175.7 (17.68) pg/ml when TLR2/TLR4, TBK1, or TLR4 inhibitors were added, respectively (n = 3) (p<0.0001). Similarly, with 0.3 mg/ml Spirulina stimulation, IFN γ levels significantly decreased from mean (standard error of mean) 15.05 (1.24) pg/ml to 0.96 (1.24), 0 (1.39), and 0 (1.24) pg/ml in the presence of TLR2/TLR4, TBK1, or TLR4 inhibition, respectively (n = 4) (p<0.0001). Spirulina increases production of inflammatory cytokines IFN β , IFN γ , and TNF α . For IFN γ , and TNF α , this effect appears to be primarily via TLR4 and TBK1 activation, thus providing a potential mechanism by which Spirulina use may lead to disease onset or flare in susceptible patients.

29. INCREASED PRO-INFLAMMATORY CONVENTIONAL DENDRITIC CELL SUBSETS IN CUTANEOUS LUPUS ERYTHEMATOSUS AND DERMATOMYOSITIS

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Background:

Dendritic cells (DCs) are important mediators of immunity and tolerance due to their ability to bridge the innate and adaptive immune system via antigen presentation and stimulation. Recent studies have identified the diversity of functionally different DC populations in mice and humans. Conventional DCs (cDCs) such as cDC1s and cDC2s have been further delineated to cDC1(anti-tumor and cytotoxic subtype), cDC2A(anti-inflammatory subtype), and cDC2B (inflammatory subtype). Both cutaneous lupus erythematosus (CLE) and dermatomyositis (DM) are known to have cDCs; here, we further classify them based on the advancements in cDC classification.

Methods:

We performed immunohistochemistry on treatment-naïve biopsies from patients with CLE or DM. Tissues were stained with anti-CLEC9A and anti-CLEC10A antibodies to identify cDC1 and cDC2Bs respectively. The number of cDC subsets were counted across three high power fields. CLE patients were stratified according to their response to hydroxychloroquine (HCQ), dual HCQ and quinacrine (QC), or antimalarial nonresponders (NR).

Results:

Our data show a significant increase in cDC1 and cDC2B cells in CLE ($p<0.05$) and cDC2B cells in DM ($p<0.05$) compared to healthy controls (HC). There was no difference in cDC1 cells in DM compared to HC ($p>0.05$). Patients with CLE who responded to QC demonstrated a significant increase in cDC2Bs compared to those that responded to HCQ alone ($p<0.05$).

Conclusion:

CLE patients also seem to have an infiltrate with more cDC1 cells raising the possibility of a greater cytotoxic component as these cells have been reported to prime a dominant CD8 response. The cDC2B inflammatory DCs may have a potential role for propagating the autoimmune response in both CLE and DM and may also contribute to HCQ refractoriness in CLE while being more responsive to QC. More research is needed to clarify the role of human cDC subsets in autoimmunity and their modulation of patient responses to therapeutics.

30. USAGE OF IMMUNOSTIMULATORY HERBAL SUPPLEMENTS IN PATIENTS WITH AUTOIMMUNE SKIN DISEASES

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The use of complementary and alternative medicine (CAM) is prevalent in dermatology. Certain CAMs, including Spirulina, Alfalfa, Chlorella, Echinacea, and Blue-Green Algae can incite an immune response in patients with dermatomyositis (DM), cutaneous lupus erythematosus (CLE) or autoimmune blistering diseases (AIBD). Given these potential effects, there is a need to characterize CAM usage in patients. We performed a retrospective study of prospectively collected data at the University of Pennsylvania to characterize CAM usage among patients with DM, CLE, AIBD (including pemphigus vulgaris and bullous pemphigoid), and controls without autoimmune disease. Information gathered included demographic information, disease history, and CAM usage and duration (Spirulina, Chlorella, Alfalfa, Green Algae, or Echinacea). Statistical analysis was performed using logistic regression, with race and sex as covariates, at a significance level of 0.05. 375 patients were enrolled, including 158 DM, 122 CLE, 31 AIBD, and 64 controls. All cohorts were predominantly female and Caucasian. CAM use was reported in 12.1% of all patients (19.6% of DM, 5.7% of CLE, 6.5% of AIBD, and 8.2% of controls). Spirulina was the most frequently-used herbal supplement for DM (14.6%), CLE (4.1%), and controls (5.7%), while blue-green algae was the most frequently-used CAM for AIBD (3.2%). Herbal use in DM was greater compared to controls (OR = 2.52, $p = 0.0710$), and compared to other autoimmune cohorts (OR = 3.47, $p = 0.0032$). Spirulina use was greater among DM patients compared to both controls (OR = 2.34, $p = 0.1096$) and to other autoimmune cohorts (OR = 4.92, $p = 0.0027$). Herbal use was not significantly associated with non-DM autoimmune diseases compared to controls. Our study demonstrates that CAM use, in particular Spirulina, is greater among patients with DM. Patients with DM should be educated regarding the risk of onset or flare from using immunostimulatory CAM such as Spirulina.

31. MRI IS NO MORE EXPENSIVE THAN AN EMG, AND MUCH LESS EXPENSIVE THAN MUSCLE BIOPSY IN PATIENTS WITH INFLAMMATORY MUSCLE DISEASE

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Muscle biopsy is a specific but not very sensitive method for diagnosing dermatomyositis. Magnetic resonance imaging (MRI) has greater sensitivity for dermatomyositis and is associated with significantly less morbidity, but has been criticized for its perceived cost, and as such, can be difficult to obtain insurance coverage for. Little has been published about the relative costs of the various modalities to evaluate for myositis.

We queried the International Business Machines (IBM) MarketScan Commercial Claims and Encounters Database for de-identified data regarding all claims, encounters and coding from in- and outpatient services for costs associated with electromyography (EMG), MRI and muscle biopsy. The component common procedural terminology (CPT) codes for EMG, MRI and muscle biopsy were identified, and the mean costs associated with each CPT code were calculated across all entries in calendar year 2017. Total mean costs of MRI, EMG and muscle biopsy were compared using a paired student's T-test. We found the mean cost for MRI of an the lower extremity without contrast to be \$790.06 (n= 39,715) while EMG (n=7,912) had a mean cost of \$791.68 (no significant difference (p=.7401)). The mean total cost for muscle biopsy (n= 654) was \$ 7,215.42 when the procedure, anesthesia, histopathological staining, interpretation and report were all accounted for. This cost was significantly higher than both MRI and EMG (p<0.0001). The out of pocket cost for patients was highest for skeletal muscle biopsy at \$328.15. MRI was quite similar to EMG, if slightly more expensive at \$184.04 vs. \$143.47.

Muscle biopsy for the diagnosis of dermatomyositis is invasive, with demonstrably lower sensitivity for identifying muscle disease and substantially greater cost than MRI and EMG. MRI represents the least invasive method for the detection of inflammatory muscle disease and cost significantly less than a muscle biopsy.

32. CHARACTERIZATION OF DERMATOMYOSITIS AND ASSOCIATED AUTOIMMUNE DISORDERS

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Autoimmune disorders have been shown to share genes that have been hypothesized to act as polygenic risk factors for autoimmunity. Studies have reported significant rates of concurrent autoimmune disease in conditions like autoimmune thyroid disease, cutaneous and systemic lupus and rheumatoid arthritis (RA). Little has been published regarding dermatomyositis' (DM) association with other autoimmune conditions.

In this retrospective cohort study, we assess DM-specific autoimmune comorbidity prevalence. We used the International Business Machines MarketScan Commercial Claims and Encounters Database (MSCCE) 2005-2015 to identify cases of DM. DM cases were included with at least two ICD-9 code entries separated by at least six months, with at least 5 years continuous follow up. Patients were considered to have an autoimmune disorder based on at least two ICD-9 claims over the enrollment period. Controls without DM were drawn from MSCCE, and age and gender matched 100:1 with cases. A total of 53 autoimmune disorders and their 117 respective claims were analyzed for concurrence with DM.

Overall, 306 patients with dermatomyositis and 30,600 matched controls without dermatomyositis were selected. For both cohorts, most patients were female (75.16%). Of the 53 autoimmune disorders evaluated, 31 were found to have statistically significant correlation with DM. Unsurprisingly, the most closely associated autoimmune disorders with DM were Systemic Lupus Erythematosus, Sjögren syndrome and Systemic sclerosis (OR 41.185, 17.64 and 54.742 respectively), but pemphigus disorders, rheumatoid arthritis, and autoimmune hepatitis (OR 20.06, 15.14, and 14.37) were also strongly overrepresented in cases versus controls.

Patterns of concurrent autoimmunity are well characterized for conditions like lupus and RA, but not DM. This study characterizes those associations and provides a valuable reminder to clinicians caring for DM patients to remain vigilant for the development of further autoimmune disease.

33. INITIAL THERAPY FOR DERMATOMYOSITIS: MALIGNANCY RISK AND COST DIFFERENCE

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There is little comparative data available between treatments for dermatomyositis(DM), and therefore, no clear consensus about best initial therapy. Common choices for initial therapy include methotrexate(MTX), mycophenolate mofetil(MMF), azathioprine(AZA), and hydroxychloroquine(HCQ).

This retrospective cohort study evaluated malignancy, cost of therapy, global cost of care, and all-cause hospitalizations as outcomes from initial therapy. The International Business Machines (IBM) MarketScan Commercial Claims and Encounters Database was utilized, with data from 2005-2015. Cases were identified by DM ICD-9 code entry at least twice separated by ≥ 6 months with ≥ 3 years continuous enrollment after sentinel diagnosis (N=1281). Cases were grouped by initial therapy; MTX, AZA, MMF or HCQ alone. Initial therapy was defined as ≥ 6 months continuous use starting within one year of sentinel diagnosis, without previous or concurrent use of another DMARD. Concurrent HCQ use was permitted for DMARDs. MTX was used as the reference for comparisons. Malignancy outcomes were compared using hazard ratios and Kaplan-Meier Survival Curves with a Log-Rank Test.

AZA and HCQ had the highest malignancy frequency (7.1% each). Hazard ratios were greatest for AZA (HR: 1.3; p=0.49) and HCQ (HR: 1.3; p=0.39) and least for mycophenolate mofetil (HR: 0.6; p=0.51), though not statistically significant. Survival Estimates showed Log-Rank test p=0.76. MMF was on average more expensive than other treatments for both the medication alone (\$200.37/mo; p<0.0001; MTX=\$60.71) and the mean cost of global care (\$2,304.42/mo; p=0.66; MTX=\$1,603.52). MTX had the lowest rate of hospitalizations (28%), with AZA alone 34.7%;p=0.30 and HCQ alone next 35%;p=0.16, though not statistically significant.

MTX was the most common initial treatment for DM, MMF the least, and malignancy rates were similar across therapies. MMF was the most expensive treatment with highest global cost of care. This difference in cost could not be accounted for by the cost of drug alone. MTX experienced fewest hospitalizations.

34. INDIRECT COSTS, BURDEN AND WILLINGNESS TO PAY ASSOCIATED WITH CANCER SCREENING IN DERMATOMYOSITIS

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Dermatomyositis (DM) is associated with malignancy. Cancer screening is generally recommended following the diagnosis but consensus guidelines do not exist. Conventional cancer screening panels (CSPs) often include tumor markers, computed tomography (CT) chest/abdomen/pelvis, age-appropriate cancer screenings and in women, a transvaginal ultrasound. Recent studies suggest positron emission tomography (PET)/CT has similar efficacy with lower out-of-pocket costs. We aimed to better understand the indirect costs and the patient's perception of burden associated with CSPs, which we compared to that of annual whole-body PET/CT for a 3-year period following the diagnosis. Our study included patients with a recent diagnosis of DM undergoing or who had recently completed CSPs. A cross-sectional online survey was generated using REDCap and then sent to patients who fit our inclusion criteria. A majority (81%) desired some form of screening for malignancy. All patients felt whole-body PET/CT would be less burdensome and most (73%) felt it would decrease missed appointments. When presented with a hypothetical situation where neither whole-body PET/CT nor CSPs were covered by insurance, 75% and 38% of patients were willing to spend ≥ 250 dollars and ≥ 1000 dollars for whole-body PET/CT compared to 56% and 19%, respectively, for CSPs. In regards to the indirect costs of CSPs, 63% missed work and used sick and/or vacation days or had family miss work (38%) using sick and/or vacation days. A subset (25%) lost wages (average of \$1,500) and one patient reported a family member lost wages. A majority (80%) incurred transportation costs (average of \$243). Overall, this study illustrates significant desire to undergo malignancy screening and a preference for streamlined testing with whole-body PET/CT. Patients incurred substantial indirect costs with CSPs and perceived that whole-body PET/CT would be less burdensome and result in better compliance with screening, which should be included when developing future consensus guidelines.

35. A CASE OF TIF1- γ DERMATOMYOSITIS PRESENTING WITH PRURITUS AND “RED ON WHITE” PATCHES ON THE SCALP

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A 72-year-old white man presented with a several-month history of intense scalp itching and redness. Allergic contact dermatitis had initially been suspected and patch testing was performed, however, topical steroids and allergen avoidance did not provide relief. On physical exam, the patient had many small hypopigmented macules on a background of erythema affecting the scalp, face, and shoulders. Dermoscopy revealed dilated tortuous capillary loops dispersed over avascular atrophic areas corresponding to clinically red and white areas, respectively. The clinical appearance was consistent with a recently described capillary vasculopathy, termed “red-on-white,” which is associated with transcriptional intermediary factor-1 γ (TIF-1 γ) autoantibodies in dermatomyositis.¹ This finding is distinct from the more classic poikiloderma seen in many dermatomyositis patients. Our patient reported no muscle weakness. Skin biopsy demonstrated interface dermatitis with vacuolar changes, perivascular lymphocytic infiltrate and dermal mucin deposition. A comprehensive myositis panel confirmed the presence of antibodies to TIF-1 γ and a diagnosis of dermatomyositis was made. Hypopigmented and telangiectatic (“red on white”) patches are characteristic findings in patients with TIF1- γ autoantibodies and recognizing this vasculopathy can facilitate prompt diagnosis. Furthermore, the presence of anti-TIF-1 γ antibodies is associated with increased risk of malignancy in DM and should prompt the clinician to initiate age-appropriate cancer screenings.² A significant proportion of anti-TIF-1 γ positive adult patients with DM have no detectable malignancy at the time of the disease onset, thus continued cancer surveillance and reassessment is critical in patients who relapse with DM symptoms.² This patient was started on oral methotrexate with a good clinical response. A comprehensive cancer screening was performed and did not reveal evidence of underlying malignancy.

Teaching Point: Red on white patches are a characteristic finding in patients with anti-TIF1- γ dermatomyositis and their recognition can facilitate prompt diagnosis and initiation of age appropriate cancer screenings, particularly in the absence of muscle weakness or other classic dermatomyositis skin findings as seen in this case.

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Lupus

36. CLINICAL AND HISTOPATHOLOGICAL ITEMS THAT DRIVE CLINICIAN CERTAINTY IN THE DIAGNOSIS OF DISCOID LUPUS ERYTHEMATOSUS

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Discoid lupus erythematosus (DLE) is the most common type of chronic cutaneous lupus erythematosus. Until our working group's efforts in 2020, there had not been validated classification criteria for DLE, which previously led to problematic heterogeneity in observational and interventional research efforts. In this study, we aimed to determine which clinical and histopathological features of DLE helped most to guide clinician certainty of diagnosis, and whether certainty was more related to items that represented disease activity versus disease damage. As part of our DLE classification criteria validation effort, domestic and international experts were asked to identify patients with cutaneous morphology suggestive of DLE. Dermatologists and dermatopathologists were asked to identify the presence or absence of each clinical and histopathological candidate item, whether these items represented disease activity or disease damage, and were asked to rank their diagnostic certainty on a 5-point Likert scale from "very certain" to "very uncertain." Ninety-one cases of DLE were evaluated, 36 of which had representative dermatopathology. 72.5% of dermatologists and 52.8% of dermatopathologists felt "very certain" with their diagnoses. The clinical item that was most associated with diagnostic certainty was "location in the conchal bowl;" 83.7% of clinicians felt "very certain" when this feature was present; "follicular hyperkeratosis / plugging" was associated with the least amount of certainty, with only 67.5% of clinicians feeling "very certain" with this feature present. The histopathologic item that was associated with the least amount of certainty was "peri-vascular/peri-appendageal lymphohistiocytic infiltrate" with only 62.5% of respondents feeling "very certain" when this feature was present. Clinical characteristics that represented "disease damage" rather than "disease activity" were also more associated with degree of clinician certainty. These findings are consistent with previous results that suggest features of DLE that represent disease damage are better identified and more specific than markers of disease activity.

37. ELEVATED SERUM LEVELS OF CXCL10 CAN DISTINGUISH SYSTEMIC LUPUS ERYTHEMATOSUS FROM CUTANEOUS LUPUS ERYTHEMATOSUS PATIENTS

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Previous studies have demonstrated that the interferon-regulated chemokines CXCL9 and CXCL10 are increased in systemic lupus erythematosus (SLE) blood and cutaneous lupus erythematosus (CLE) skin. However, serum levels of CXCL9 and CXCL10 in CLE and SLE and controls have not been compared. To address this knowledge gap, we collected serum samples from 44 CLE patients, 43 SLE patients, and 29 controls. Of the 43 SLE patients, 17 had a concomitant diagnosis of CLE. Serum levels of CXCL9 and CXCL10 were measured using ELISAs. Chemokine concentrations between groups were compared using the Mann-Whitney or Kruskal-Wallis test. The ability of these chemokines to discriminate between CLE and SLE patients was measured using the area under the receiver operating characteristic (ROC) curve. CLE sera had elevated CXCL9 and CXCL10 levels versus controls (CXCL9: median: 50.91 pg/mL (interquartile range (IQR): 31.6-122.1 pg/mL) vs. 20.54 pg/mL (12.7-34.4 pg/mL) ($p<0.0001$), CXCL10: 218.68 pg/mL (123.0-271.4 pg/mL) vs. 124.12 pg/mL (89.5-149.4 pg/mL) ($p=0.0007$)). Serum levels of CXCL10 in SLE patients (473.88 pg/mL (339.6-1515.4 pg/mL)) were significantly elevated compared to CLE patients ($p<0.0001$) and healthy controls ($p<0.0001$). CXCL9 levels were also significantly higher in SLE patients (77.17 pg/mL (30.1-134.7 pg/mL)) ($p<0.0001$) but not versus CLE patients. ROC analysis showed greater distinction of CLE and SLE patients with CXCL10 than CXCL9. CXCL10 produced a curve with preset values of sensitivity and specificity of greater than 70% and yielded an area under curve of 0.84 ($p<0.0001$). Our data show that SLE and CLE patients may be distinguished by their CXCL10 sera levels. To address study limitations, future longitudinal, larger studies are necessary to confirm our hypotheses that CXCL10 is a biomarker that separates CLE from SLE, and can track systemic disease spread for CLE patients.

38. USING THE CLASI DAMAGE SCORE TO CATEGORIZE AND IDENTIFY RISK FACTORS FOR WORSENING CUTANEOUS LUPUS DISEASE DAMAGE

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Classifying scoring measures in cutaneous lupus erythematosus (CLE) provides a standardized way to categorize disease severity and provide clinical context. While CLASI activity scores have been classified into mild, moderate, and severe categories, CLASI damage scores (CLASI-D) have not been similarly subdivided. The objective of our study is to group CLASI-D scores into mild, moderate, and severe categories, and compare patient characteristics and quality of life among the different categories. 270 patients were included in this cross-sectional study. Physician global assessment (PGA) damage ratings were used to assign patients as having mild, moderate, or severe disease damage, which were then analyzed with CLASI-D scores. The cutoff point for the CLASI-D score for each category was selected as the last of three consecutive CLASI-D scores with the highest frequency in the same category. Receiver operating characteristic curves were used to evaluate these cutoff points. Clinical characteristics, demographics, and Skindex-29+3 scores between categories were compared via Chi-Square or Kruskal-Wallis tests. Mild damage corresponded with $CLASI-D \leq 5$ (sensitivity 86%, specificity 96%, correctly classified 91%) while severe damage corresponded with $CLASI-D \geq 18$ (sensitivity 58%, specificity 93%, correctly classified 88%). 120, 110, and 40 patients had mild, moderate, and severe disease damage, respectively. Black patients were more likely to present with severe disease than mild (75% vs 28%, $p < 0.0001$), as were patients with chronic CLE (98% vs 60%, $p < 0.0001$), and smokers (70% vs 42.5%, $p < 0.01$). Mean CLASI-A score was higher in patients with worse damage (3.5 ± 4.9 in mild vs 13.8 ± 9 in severe, $p < 0.0001$). Skindex 29+3 scores were worse as damage severity increased ($p < 0.0001$). Limitations include single center study with a single rater. Classifying damage scores and understanding risk factors will assist providers in ascertaining clinical significance of CLASI scores. Further studies in heterogeneous populations will help further validate these ranges.

39. DISEASE ACTIVITY REMISSION AND RECURRENCE IN CUTANEOUS LUPUS ERYTHEMATOSUS

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Little is known about disease remission and recurrence in patients with cutaneous lupus erythematosus (CLE). In a retrospective cohort study of 97 CLE patients, we assessed frequency of and factors associated with remission and recurrence in CLE. The primary outcomes were remission and recurrence of activity which were defined as reaching Cutaneous Lupus Erythematosus Activity and Severity Index activity (CLASI-A) equal to 0, and >1 (after remission) respectively. Time to remission and recurrence was calculated using survival curve analyses. We identified clinical factors associated with these outcomes using univariate and multivariable analyses. Variables that were significant on survival curve analyses were further analyzed in a Cox proportional hazards model to identify variables that are predictive of shorter time to remission. Forty-six patients (48%) reached remission of CLE activity. Median time to remission was 5.45 years from the initial visit. Patients who achieved remission were less likely to have discoid lupus erythematosus (DLE) (OR:0.20 (95% CI:0.05-0.70), p=0.01) and more likely to have mild baseline activity (OR:1.75 (1.30-2.38), p< 0.001). Cox model showed that absence of DLE (HR:4.20 (1.98-8.92) and lifetime non-smoker history (HR:2.57 (1.22-5.43)) predicted a shorter time to remission. 29 patients (63%) experienced recurrence within a median of 2.1 years from their remission date. Patients with recurrence of CLE activity had a longer disease duration prior to their baseline visit (p=0.002), and were more likely to have DLE (72% v. 29%, p=0.005), but these factors were not significant in the multivariable analyses. In summary, patients with mild baseline activity and with CLE subtypes besides DLE were more likely to achieve remission, while non-smoking history and lack of DLE were predictive of a shorter time to remission. These findings may be helpful for clinicians to guide CLE patients on their potential disease course.

40. DIFFERENCES IN DISCOID LUPUS DISTRIBUTION AND CHARACTERISTICS IN BLACK AND NON-BLACK PATIENTS

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Epidemiological studies have shown that discoid lupus erythematosus (DLE) has a higher incidence and prevalence in minorities, particularly Black individuals. Racial differences in clinical presentation amongst DLE patients are not well understood. The objective of this retrospective cohort study was to examine the differences in DLE lesion distribution and characteristics of Black individuals compared to non-Black individuals. A total of 182 DLE patients (111 Black and 71 non-Black) who had a reported race/ethnicity, and completed Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) scores were included. Univariate analysis was used to determine significant clinical factors between groups. Blacks had worse overall CLASI damage scores (10.8 ± 6.34) vs. non-Blacks (8.06 ± 7.89 , $p=0.0002$). Black DLE patients had more scalp (82% v. 65%, $p=0.005$) and ear (54% v. 35%, $p=0.013$) involvement. Of patients with scalp involvement, black individuals were more likely to have dyspigmentation (92.4% v. 56.5%, $p<0.001$) and scarring alopecia (89.1% v. 76.1%, $p=0.04$) present. While facial involvement did not differ between groups, Black DLE patients more frequently had dyspigmentation (95.7% v. 70.2%, $p<0.001$) and less frequently had scale (27.1% v. 48.9%, $p=0.02$). Among those with arm and hand involvement, dyspigmentation was more likely in Black individuals (100% v. 39.5%, $p<0.001$). Our study highlights lesional location and characteristic differences in Black DLE patients vs. non-Black DLE patients. Specifically, Black DLE patients were more likely to have scalp and ear involvement, scarring alopecia and dyspigmentation. This study will help guide practitioners in recognizing racial differences in DLE, ultimately helping them to identify DLE. Larger studies are needed to confirm our findings.

41. DEVELOPMENT OF SYSTEMIC LUPUS IN PATIENTS WITH CUTANEOUS LUPUS USING THE 2012 SYSTEMIC LUPUS INTERNATIONAL COLLABORATING CLINICS (SLICC) CLASSIFICATION CRITERIA FOR SYSTEMIC LUPUS ERYTHEMATOSUS

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Studies investigating patients with cutaneous lupus (CLE) progressing to systemic lupus (SLE) have used the American College of Rheumatology (ACR) criteria but not the newer Systemic Lupus International Collaborating Clinics (SLICC) classification criteria. Our study aimed to characterize progression from CLE to SLE using the SLICC criteria by determining frequency, identifying baseline risk factors for progression, and describing criteria gained in a cohort of CLE patients. Secondarily, we aimed to compare the frequency of SLE diagnosis by the SLICC versus the ACR criteria. Our study was a retrospective, single-center chart review study of CLE patients seen in the outpatient dermatology clinics at University of Texas Southwestern and Parkland Memorial Hospital between December 2008 to May 2020. Patients were included if they had a diagnosis of CLE, were age 18 years or older, and had at least 6 months of follow up. Patients were excluded if they were diagnosed with SLE at or within 6 months of their initial visit or had other autoimmune diseases. We applied the SLICC and ACR SLE criteria to CLE patients. 10.8% (10/93) of patients progressed from CLE to SLE using the SLICC criteria during a median time of 7.8 years. Baseline risk factors included ANA positivity, elevated SLICC immunologic criteria, and total criteria. Patients frequently gained leukopenia, lymphopenia, thrombocytopenia, and chronic cutaneous lupus that led diagnosis of SLE by the SLICC. 16.1% (15/93) CLE patients progressed to SLE under the ACR criteria. Fewer patients were diagnosed with SLE by the SLICC criteria primarily due to removal of the ACR photosensitivity criterion. Regular lab monitoring, including autoantibody levels and complete blood counts, can be helpful to detect systemic progression in CLE patients. Larger prospective studies on progression from CLE to SLE under the SLICC criteria would further aid clinicians in educating CLE patients on their prognosis.

42. QUALITY OF LIFE OF PATIENTS WITH FACIAL CUTANEOUS LUPUS ERYTHEMATOSUS

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Lesions on exposed skin have a significant impact in the quality of life (QoL) of patients. This study aims to compare the QoL of patients with cutaneous lupus erythematosus on the face (FCLE) versus patients without facial lesions, and determine whether lesion activity (erythema, scale) and damage (pigmentation, scarring) on the face have an impact on QoL. This is a cross-sectional study of CLE patients seen at the University of Pennsylvania. Patients with a diagnosis of CLE, have available Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) assessments, and were able to complete the Skindex-29+3 questionnaire on the initial visit were included. Demographics were summarized as frequencies and percentages for categorical variables, and as median for continuous variables. For comparison of QoL across patient groups, one-way ANOVA and Bonferroni correction were used. Multivariable regression analyses were used to determine the relationship of FCLE and other variables to the QoL of CLE patients. There were 366 CLE patients in this study. Among them, 255 had FCLE. Specifically, 99 patients had both activity and damage, 124 had activity only, and 32 had damage only. The mean Skindex-29 Symptoms, Emotions and Functioning scores of patients who had both activity and damage (S=47.34, E=55.06, F=43.45) as well as activity alone (S=43.55, E=53.72, F=43.91), were significantly different from those who had no facial lesions (S=35.05, E=42.50, F=31.78) ($p < 0.05$). Further, FCLE with activity and damage and active FCLE alone were significantly associated with poor QoL in all SKINDEX-29+3 domains even after controlling for the female gender and smoking status, which are known to be associated with poor QoL in CLE. Race and CLE subtype did not have a significant effect on QOL scores ($p > 0.05$). FCLE patients have worse QoL compared with patients without facial lesions. FCLE activity drives QoL more than damage.

43. DIRECT IMMUNOFLUORESCENCE IN CONNECTIVE TISSUE DISEASE: A CROSS-SECTIONAL STUDY OF PAIRED H&E AND DIF SPECIMENS, WITH EMPHASIS ON LUPUS/DERMATOMYOSITIS

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Direct immunofluorescence (DIF) can be a helpful adjunctive test when evaluating patients for autoimmune connective tissue disease (CTD) involving skin, particularly when hematoxylin and eosin (H&E) is non-diagnostic. The objective of this study is to characterize use of DIF in skin biopsies at an academic medical center, with emphasis on autoimmune CTD. This study focuses on: (1) real-world use of DIF; (2) diagnostic yield of DIF in lupus/dermatomyositis; and (3) associations between DIF and clinical features in lupus/dermatomyositis. The study population for this cross-sectional study consists of consecutive paired DIF and H&E samples from our institution over a 1-year period (2018-19). Clinical query, DIF and H&E results were extracted from electronic medical record (EMR). For samples with interface dermatitis on H&E, EMR was searched for evidence of CTD. Samples with clinicopathologic correlation (interface dermatitis and history consistent with lupus or dermatomyositis) were considered to represent lesional biopsies of CTD. Additional clinical/serologic data are being extracted from EMR and linked to these samples for analysis. Of 217 paired DIF and H&E samples submitted, clinical query was CTD (lupus, dermatomyositis, undifferentiated CTD) in 45 (21.7%). For samples with a clinical query of CTD, 15/45 (33.3 %) demonstrated DIF positivity overall, and 10/45 (22.2%) demonstrated granular deposition of immunoglobulins along basement membrane zone. Yield of DIF testing in lesional biopsies of CTD and potential associations with clinical features is being evaluated. This cross-sectional study adds to prior small retrospective studies attempting to characterize DIF findings and clinical associations in patients with CTD. Strengths include side-by-side analysis of dermatomyositis and lupus samples from carefully phenotyped patients. Although this study is limited by small numbers, we plan to extend analysis through another 3 years to gain a greater understanding of diagnostic yield of DIF testing and clinical associations in patients with lupus and dermatomyositis.

44. TRENDS IN INCIDENCE OF CUTANEOUS LUPUS ERYTHEMATOSUS FROM 1976 TO 2018: A POPULATION-BASED STUDY

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Background

Cutaneous lupus erythematosus (CLE) is a dermatologic autoimmune disease that affects women disproportionately. Incidence data is needed to better estimate the disease burden. We aimed to investigate the incidence of CLE and its secular trends from 1976 to 2018.

Method

Through a population-based research infrastructure all patients in our region from 1976-2018 who received an SLE or CLE diagnostic codes or laboratory measures related to lupus (ANA, anti-DNA, and others) underwent a review of clinical notes, pathology and medical photography. Incident cases had to satisfy the definition of CLE based on Sontheimer et al. Only patients with subacute or chronic CLE were included. The incidence date was that of the first lesion described in the medical record.

Age and sex specific incidence rates were adjusted to the 2010 US white population. 95% confidence intervals for incidence rates were computed through Poisson regression.

Results

We identified 209 incident CLE cases between 1976 and 2018. Mean age was 50.3, 72% were female. The proportion of Caucasians decreased over the years. 6.2% had a previous or concurrent diagnosis of SLE.

Incidence rate of CLE between 1976 and 2018 was 4.5 (95%CI: 3.9, 5.2) per 100,000. Females had a higher incidence than males: 6.2 and 2.7 per 100,000, respectively. Age- and sex-specific incidence rates peaked at the 60-69 age group in both sexes. There was an increase in CLE incidence during 1985-1995 that was observed in both sexes and posteriorly trended downwards (Figure).

Conclusion

Our data shows that the overall incidence of CLE has remained stable over the decades with a sudden increase in 1985-1995 with posterior return to prior rates. The majority of the CLE cases do not have SLE prior or concurrent to diagnosis.

45. MINIMAL CLINICALLY IMPORTANT DIFFERENCE IN QUALITY OF LIFE FOR PATIENTS WITH CUTANEOUS LUPUS ERYTHEMATOSUS

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Objectives: The objective of this longitudinal cohort study is to estimate the sensitivity to change and internal consistency of CLEQoL measure and to derive its minimal clinically important difference (MCID).

Methods: 109 patients diagnosed with CLE were recruited from the outpatient university-based dermatology clinics - OU Physicians Dermatology, Oklahoma and the University of Texas Southwestern Medical Center and Parkland Hospital in Dallas, Texas. QoL information was collected from at least two visits spaced at least six months apart. Cronbach α was used to estimate internal consistency. Sensitivity to change was assessed using Cohen's d (effect size), standardized response mean, and Guyatt's responsiveness statistics. Responsiveness was assessed using MCID estimates. Analysis of change from baseline was performed for the CLEQoL scores with higher scores indicating worse QoL. Changes in the CLEQoL measure were compared to the scores on the patient's global impression of change (PGIC).

Results: Cronbach α was 0.97 for the CLEQoL scale. For patients with improvement at six months, the Cohen's d (effect size), standardized response mean, and Guyatt's responsiveness statistic estimates (mean (CI)) were 1.39 (0.43, 2.19), 1.25 (0.28, 2.11), and 1.68 (0.22, 2.82), respectively. For each PGIC category, the values for MCID were: improved (9.93), and worsened (-11.34). MCID values were smaller among chronic patients and those with better baseline quality of life.

Conclusions: Results show high internal consistency, sensitivity to change for the CLEQoL, and an MCID that allows patients with differences in disease severity to demonstrate improvement. These estimates along with other measures of efficacy to assess the value of healthcare intervention can aid clinicians in interpreting the clinical relevance of changes in QoL over time. Future studies with larger sample sizes and heterogeneous samples are encouraged to estimate MCIDs in QoL outcome measures in CLE.

46. PRIMARY CUTANEOUS GAMMA-DELTA T-CELL LYMPHOMA DISGUISED AS LUPUS PANNICULITIS

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Gamma-Delta T-Cell Lymphoma (GDTCL) is a rare, aggressive subtype of Peripheral T-cell Lymphoma (PTCL) that presents in adults with plaques and ulcerative nodules. Here, we present a case of a middle-aged, otherwise healthy male with primary cutaneous GDTCL histologically resembling lupus panniculitis. Over just a few months, the patient had developed recurrent fevers and night sweats associated with multiple tender subcutaneous nodules on the buttocks, thigh and shoulder. The nodules spontaneously evolved into shallow ulcerations that healed to form atrophic scars. He was previously seen in the emergency department and was treated with oral antibiotics for the presumed diagnosis of cellulitis with no response. Upon referral to the dermatology clinic, three deep punch biopsies were obtained from distinct lesions that revealed lobular lymphocytic panniculitis, superficial and deep perivascular and periadnexal lymphocytic infiltrate with increased dermal mucin, collectively consistent with lupus panniculitis. T cellZ receptor gene rearrangement was performed and was negative. Despite treatment with hydroxychloroquine, the patients' condition did not improve. In addition, he developed persistent B symptoms, dyspnea and worsening pancytopenia, which prompted referral to hematology/oncology. Subsequent bone marrow biopsy revealed hemophagocytic lymphohistiocytosis and pan-computed tomography scans revealed new pulmonary nodules. Biopsy of the pulmonary nodules was suggestive of extranodal NK/T cell lymphoma, nasal type, surprisingly negative for EBV. Given the unusual nature of the case, it was submitted to the NIH/NCI for review. A positive TCR delta immunohistochemical test in the lung specimen and consideration of the clinical cutaneous findings strongly favored a diagnosis of primary cutaneous GDTCL with metastasis to lung. The patient has responded well to chemotherapy (CHOP with Etoposide) and recent bone marrow transplantation. This case highlights the importance of questioning one's initial diagnosis when clinical and/or laboratory data do not perfectly fit and paying special attention to the presence of unexplained systemic symptoms.

Teaching point: It is essential to question one's initial diagnosis when clinical and/or laboratory data do not perfectly fit, especially with the presence of unexplained systemic symptoms.