Patient with treatment resistant peristomal and scalp dermatitis

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Key words: clinicopathological correlation; Langerhans cell histiocytosis.

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Funding sources: None.

IRB approval status: Not applicable.

Patient gave consent for their photographs and medical information to be published in print and online with the understanding that this information may be publicly available.

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JAAD Case Reports 2023;31:13-5.

2352-5126

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https://doi.org/10.1016/j.jdcr.2022.11.002
CASE PRESENTATION

A 39-year-old male with history of cloacal extrophy with colostomy and ileal conduit presented with a rash that started around his ostomy and on his scalp and spread to involve his gluteal cleft and groin gradually over 1 year. Physical examination revealed erythematous scaly papules coalescing into plaques with petechiae surrounding his ostomy and on his scalp (Figs 1 and 2). Previous biopsies from peristomal skin and scalp showed spongiotic and psoriasiform dermatitis, respectively, and he had failed topical steroids, fluconazole, dupilumab, and guselkumab. A tangential biopsy from the scalp revealed a polymorphic infiltrate including histiocytes and eosinophils involving the epidermis and papillary dermis with folliculotropism (Fig 3).

Question 1: What is the most likely diagnosis?

A. Langerhans cell histiocytosis (LCH)
B. Mycosis fungoides
C. Dermatomyositis
D. Multicentric reticulohistiocytosis (MCR)
E. Seborrheic dermatitis

Answers:

A. LCH — Correct. LCH is a spectrum of diseases caused by a clonal proliferation of Langerhans cells. Patients present with scaly, erythematous, seborrhea-like eruptions with follicular papules on the scalp, face, trunk, and erosions in intertriginous areas. Birbeck granules on electron microscopy were used to diagnose LCH, but this has been replaced by CD1a and Langerin immunohistochemical stains. BRAF V600E is the most common mutation identified in LCH lesions.

B. Mycosis fungoides — Incorrect. Mycosis fungoides is the most common subtype of cutaneous T-cell lymphoma and presents with erythematous patches and plaques in sun-protected areas. Histology demonstrates papillary dermal fibrosis and epidermotropism of atypical lymphocytes.

C. Dermatomyositis — Incorrect. Dermatomyositis is a multisystem autoimmune connective tissue disease characterized by inflammatory myopathy, photo-distributed cutaneous eruption, and pathogenic autoantibodies. Age-appropriate screening is recommended to rule out underlying malignancy. Although psoriasiform dermatitis of the scalp is seen in dermatomyositis, this patient’s rash morphology, distribution, and pathology are atypical for dermatomyositis.

D. MCR — Incorrect. MCR is a rare histiocytic disorder associated with solid organ and hematologic malignancy. Unlike our case, MCR presents with symmetric erosive polyarthritits and papulonodular lesions on the face and dorsal hands. Histology shows CD207-negative histiocytic infiltrate and multinucleated giant cells.

E. Seborrheic dermatitis — Incorrect. Seborrheic dermatitis presents with thick, pink plaques with scale on the scalp, nasolabial folds, trunk, and skinfolds, but lacks follicular papules.

Question 2: What is the most specific immunohistochemical stain to establish the diagnosis?

A. CD207 (Langerin)
B. Factor XIIIa
C. CD117
D. S100
E. CD68

Answers:

A. CD207 (Langerin) — Correct. LCH is a spectrum of diseases caused by a clonal proliferation of Langerhans cells (LCs). Immature LCs express high levels of langerin (CD207) protein which is required for the formation of Birbeck granules. Positivity for Langerin and CD1a confirm the diagnosis. CD1a positive, Langerin negative cases are classified as indeterminate cell histiocytosis. In this patient, CD1a and Langerin immunohistochemical stains were positive, confirming a diagnosis of Langerhans cell histiocytosis.

B. Factor XIIIa — Incorrect. Factor XIIIa is a dermal dendrocytic marker that is a characteristic of macrophages. It can be found in non-Langerhans cell histiocytosis like juvenile xanthogranuloma, xanthoma disseminatum, Rosai-Dorfman disease, sinus histiocytosis with massive lymphadenopathy, and Erdheim-Chester disease.

C. CD117 — Incorrect. CD117 is a marker for mast cells. Mast cells are not present in LCH.

D. S100 — Incorrect. S100 is a protein found on cells that originate from neural crest cells, including the skin. Epidermal Langerhans cells can stain positive for S-100, but S-100 is not specific to LCH. In addition to Langerhans cell disease, it can be found in non-Langerhans cell histiocytosis like Rosai-Dorfman disease.
disease, sinus histiocytosis with massive lymphadenopathy, and malignant histiocytosis.²

E. CD68 — Incorrect. CD68 is a surface marker that is characteristic of macrophages. It can be found in non-Langerhans cell histiocytosis like juvenile xanthogranuloma, xanthoma disseminatum, multicentric reticulohistiocytosis, and aggressive forms of histiocytosis like histiocytic sarcoma and malignant histiocytosis.¹²

Question 3: What is the most appropriate treatment for this patient?

A. Desmopressin
B. Bisphosphonate
C. Acitretin
D. Methotrexate
E. Bexarotene

Answers:

A. Desmopressin — Incorrect. Diabetes insipidus (DI) is the most common endocrinopathy associated with adult onset LCH and occurs in up to 40% of the patients with multi-system disease. Diabetes insipidus often requires hormonal replacement therapy as it does not respond to any LCH directed therapy.³

B. Bisphosphonate — Incorrect. Bisphosphonates can be used to treat multifocal bone disease of LCH.⁴ Patients should be counseled on the risk of osteonecrosis of the jaw.

C. Acitretin — Incorrect. While helpful for psoriasis and mycosis fungoides, acitretin would not be an appropriate initial choice for therapy of LCH.

D. Methotrexate — Correct. When BRAF V600e mutation is not present, cutaneous LCH can be treated with immunosuppressing agents like corticosteroids, thalidomide, azathioprine, and methotrexate rather than vemurafenib, a BRAF kinase inhibitor that may be a valuable treatment for LCH patients with severe multisystem disease and detected BRAF V600e mutation.⁴ Low dose methotrexate has been used successfully in patients with skin limited LCH at doses of 20 mg weekly.³

E. Bexarotene — Incorrect. Bexarotene is a systemic retinoid approved for patients with advanced mycosis fungoides. The most common side effects are hyperlipidemia and hypothyroidism. Although treatment with acitretin has been shown to be effective in adult onset LCH with skin limited disease, there are no published reports for the use of bexarotene in LCH.⁵

Conflicts of interest
None disclosed.

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