

A diagnosis of mycosis fungoides in a pediatric patient with recurrent Langerhans cell histiocytosis

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Abbreviations Key

LCH	Langerhans cell histiocytosis
CD	Cluster of differentiation
BRAF	v-RAF murine sarcoma viral oncogene homolog B
MF	Mycosis fungoides
nbUVB	Narrowband ultraviolet B

Letter to the Editor

An 8-year-old female presented with a reddish-brown papule that tripled in size. She had a history of intermittent hypopigmentation (Figure 1a). Biopsy of the papule revealed a lymphohistiocytic infiltrate with increased CD1a and S100-positive Langerhans cells, consistent with Langerhans cell histiocytosis (LCH) (Figure 1D). BRAF testing was negative. Workup for other sites of disease was negative.

There was minimal response to topical steroids. She began oral prednisone with partial response but flared with taper. Treatment with oral methotrexate and prednisone (1) resulted in complete response. With discontinuation, she had recurrence of papules and hypopigmentation. Repeat biopsy confirmed LCH. Methotrexate was resumed and she had full resolution of papules but persistent hypopigmentation; however, her papules recurred with discontinuation of therapy.

Repeat biopsy revealed atypical epidermotropic CD8-positive T-cells that displayed loss of CD2 and diminished expression of CD7 (Figure 1C.) A T-cell receptor gene rearrangement study identified a clonal T-cell population. CD1a did not reveal increased Langerhans cells. No clonal T-cell population was identified in prior biopsies. The patient was diagnosed with hypo-pigmented mycosis fungoides (MF), Stage IB. She started treatment with topical triamcinolone and nbUVB with complete resolution of her hypopigmentation (Figure 1B).

LCH describes an abnormal proliferation of usually clonal LCs and commonly occurs in children with varying clinical presentations. It is thought to be an inflammatory myeloid neoplasm as there is a high rate of recurrent mutations of the MAP2K pathway and transcriptional profiling suggests that LCs are similar to bone marrow derived monocyte and dendritic cell precursors (2). Additionally, LCH has been described to be associated with

many other neoplasms (3) and may precede, follow or occur simultaneously. It is unclear in our patient which entity occurred first as she had no prior biopsies of the hypopigmentation.

Cutaneous T-cell lymphoma is a rare disease with an estimated incidence of 10.2 per million persons (4, 5). It is uncommon in children with peak incidence at 80 years (6). A review of the International Childhood Registry (CRCL) revealed increased incidence in males and median age of diagnosis of 10 years (7). Mycosis fungoides (MF) is the most common of the cutaneous T cell lymphomas in all ages (8, 9). It typically presents as hypo- or hyperpigmented lesions, patches, plaques or poikiloderma. Hypo-pigmented lesions predominate in younger patients.

A literature review highlights two cases of mycosis fungoides associated with LCH (10). Both were older adult males diagnosed with mycosis fungoides with CD1a and S100 positive LCs admixed within biopsy samples. These differ from our case in that the nodules of LCs occurred concurrently, as is common in cases of LCH-associated lymphoma. Interestingly, our patient demonstrated LCH on early biopsies but all recent biopsies showed MF without LCH. To our knowledge, this is the first pediatric case of a patient with initial diagnosis of LCH, responsive to treatment with multiple recurrences, and subsequent diagnosis of mycosis fungoides. This case should prompt clinicians caring for patients with LCH to be vigilant for the presence or development of hypo-pigmented patches/plaques that could represent MF, and require a different treatment strategy.

Ethics Statement: Informed consent (from the patient's mother) was obtained and properly documented.

Conflict of Interest: None of the authors have any conflicts of interest to disclose.

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Figure Legends

Figure 1: A. Diffuse erythematous thin plaques with fine scale as well as hypopigmented macules on the anterior trunk, approximately 1 year after the initial diagnosis. B. Significant re-pigmentation of the hypo-pigmented lesions approximately eight months after starting phototherapy. C. A biopsy of an erythematous papule in a background hypopigmented patch demonstrated cytologically-atypical epidermotropic T-cells (400X). D. An excision of a large and rapidly growing papule revealed numerous scattered and collected Langerhans cells with reniform nuclei, longitudinal nuclear folds and relatively abundant pale, eosinophilic cytoplasm. (400X).

