

## BRIEF ARTICLES

## Langerhan's Cell Histiocytosis Masquerading as Intertrigo

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## ABSTRACT

Cutaneous Langerhan's cell histiocytosis (LCH) is considered a great clinical mimicker that affects the scalp and intertriginous regions although it may be generalized. Cutaneous LCH is commonly misdiagnosed and thus patients can receive inadequate or inappropriate treatment for considerable periods of time. We present a case report of a patient who had LCH that was masquerading as intertrigo for years. With the proper diagnosis the patient had a remarkable response to methotrexate. This case highlights the importance of keeping Langerhan's cell histiocytosis (LCH) on the differential and once the diagnosis is made, evaluating for extracutaneous LCH.

## INTRODUCTION

Langerhan's cell histiocytosis (LCH) is a clonal neoplastic disease of the Langerhan's cell<sup>1</sup>. Langerhan's cell histiocytosis was first described by Dr. Alfred Hand in 1893, although he incorrectly attributed the presentation to tuberculosis<sup>2</sup>. Subsequently a heterogenous group of diseases were described, mainly in children and eventually unified under the name Histiocytosis X in 1953 and then finally Langerhan's cell histiocytosis in 1987 once the cell of origin was elucidated<sup>3</sup>. Langerhan's cell histiocytosis is a disease primarily of children, with a smaller second peak occurring in adults and is rare in the elderly<sup>4</sup>. Langerhan's cell histiocytosis is classified based on the number of organ systems involved and focality of the lesions<sup>1</sup>. Although the etiology

of LCH is unknown, a recent study shows that approximately half of LCH cases have an activating BRAF V600E mutation, suggesting that it is a neoplastic rather than a hyperplastic process<sup>5</sup>. We present a case of an elderly patient with Langerhan's cell histiocytosis that had been misdiagnosed and treated for over a year as severe, refractory intertrigo.

## CASE REPORT

A 70 year old Caucasian female presented with a 1 year history of painful rash involving the inframammary and inguinal folds, vulva and scalp. The vulvar erosions were causing dysuria. Her past medical history was significant for diabetes insipidus, diagnosed 7 years prior, treated with desmopressin

intranasal spray BID three days a week, hypertension treated with carvedilol and diverticulitis requiring a Hartman procedure and subsequent colostomy reversal. Prior to presentation she was treated with many antifungals in varied formulations including oral, topical and vaginal suppository. She stated none of these seemed to work so she has been using Vaseline and Gold Bond powder.

Physical exam revealed a scalp with thick yellow adherent scale also present along the hair shafts. The bilateral inframammary and inguinal creases exhibited beefy red-purple eroded and macerated plaques with purulent drainage (Figure 1 and 2). Purple-red edematous plaques with purulent drainage were observed on the labia majora.

Laboratory studies were unremarkable except for a bacterial culture which grew methicillin sensitive *Staph aureus*, alpha hemolytic strep, and gamma strep, and a fungal culture positive for *Candida albicans*, taken from the inframammary fold. Complete metabolic panel was unremarkable with the exception of alkaline phosphatase 431 (reference range 35-105 U/L). The patient was treated with a 7 day course of cephalexin and 4 day course of fluconazole without resolution in symptoms. Punch biopsies were obtained from the abdomen.

Punch biopsies of the central and left abdomen revealed an atypical infiltrate that filled the papillary dermis with epidermotropism consisting of large cells with abundant cytoplasm and reniform-type nuclei admixed with eosinophils (Figure 3). The atypical cells stained strongly for CD1a and S100 and were negative for Melan-A. The findings were consistent with Langerhan's cell histiocytosis.

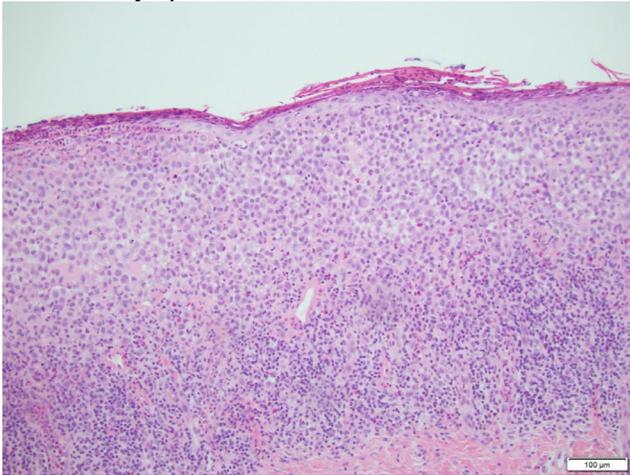
**Figure 1 and 2:** Erythematous plaques present on the inframammary folds.



## DISCUSSION

Cutaneous LCH is considered a great clinical mimicker that affects the scalp and intertriginous regions although it may be generalized. Cutaneous LCH is commonly misdiagnosed as intertrigo, eczema, inverse psoriasis, and when present in the scalp it may be misdiagnosed as seborrheic dermatitis<sup>1</sup>. Skin-limited LCH is rare, as occult multisystem disease is identified in most patients following systematic work up<sup>1</sup>. A Mayo Clinic cohort of 314 patients aged 2 months to 83 years, revealed only 14 patients with isolated mucocutaneous LCH<sup>4</sup>. This highlights the importance of fully staging a patient who is diagnosed with LCH. Full

**Figure 3:** Histopathology showing atypical infiltrated filling the papillary dermis with epidermotropism and abundant cytoplasm.



staging includes complete blood count and metabolic panel (including liver enzymes), coagulation studies, thyroid stimulating hormone, free T4, urinalysis, skeletal survey (including a skull series), and chest x-ray<sup>1</sup>. Treatment of LCH with localized cutaneous involvement includes topical nitrogen mustard 20% and phototherapy<sup>1</sup>. For mild symptoms, with no “risk organs” involved including bone marrow, liver, spleen and CNS, methotrexate 20mg PO/IV weekly, azathioprine 2mg/kg/day PO or thalidomide 100mg daily PO are recommended<sup>1</sup>.

Our patient had mucocutaneous LCH involving the vulva, scalp and intertriginous creases with likely pituitary involvement given the preceding diagnosis of diabetes insipidus with no obvious findings on the brain MRI at the time of diagnosis, 7 years prior. Pituitary disease is most commonly due to osseous involvement<sup>1</sup>. After the diagnosis of LCH was made, a skeletal survey was performed and was negative, despite the alkaline phosphatase elevation. The patient was started on methotrexate increasing from 15mg once weekly after the first month to 25 mg once weekly. There was significant improvement in degree of maceration after 5 months of therapy (Figure 4). The elevated

alkaline phosphatase subsequently responded to methotrexate therapy, raising the question of possible subclinical osseous involvement. Langerhan’s cell histiocytosis is a rare dermatosis that should remain on the differential for patients presenting with refractory intertrigo. Once the diagnosis is determined, a full staging as outlined above should be performed and will dictate the aggressiveness of treatment.

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