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Case Report
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Cutaneous Langerhans Cell Histiocytosis Masquerades as a Chalazion in a Toddler Patient

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Abstract

Background: Langerhans Cell Histiocytosis (LCH) is an uncommon disease that involves the excessive growth of histiocytes, and is more prevalent among children population. LCH can impact various organs with diverse clinical presentations. However, the ophthalmic presentation of LCH had been scarcely reported.

Case Report: In this article, we report a unique case of a 17-month-old girl who presented with a non-resolving eyelid chalazion for 2 months, follows up by disseminated skin and left ulna bony involvement. The biopsy of eyelid lesion confirmed the diagnosis of LCH. The lesions regressed without evidence of recurrence after systemic chemotherapy.

Conclusion: Although LCH of the eyelid is uncommon, it is crucial to consider it as a potential diagnosis for nodular lesions on the eyelid.

Keywords: Langerhans cell histiocytosis; Pediatric; Chalazion; BRAF mutation

Key Message

We reported a rare case of LCH which masquerades as a non-resolving eyelid chalazion initially, follows up by disseminated skin and bony involvement, and had been successfully treated with chemotherapy. Clinicians should keep this differential diagnosis in mind, especially for patients with poor response to initial treatment.

Abbreviations

LCH: Langerhans Cell Histiocytosis; TPOG: Taiwan Pediatric Oncology Group

Introduction

Langerhans Cell Histiocytosis (LCH) is a rare disease characterized by the proliferation of and infiltration of immature histiocytes in various tissues [1]. The exact pathogenesis of LCH is not clear, but several molecular alterations such as BRAF mutations in V600E, MAP2K1 mutations, and TP53 alterations have been reported [2].

LCH predominantly occurs in children under the age of 6, with an incidence of 4 per million children and mild male predominance [3]. The clinical manifestations of LCH varies diversely, ranging from localized skin rash to disseminated involvement of skin, bones, pituitary gland, lymph nodes or the lung [1]. Among all the presentation of LCH, the cutaneous and bony involvement are most common, which could be observed in about 33% and 80% of pediatric patients, respectively [4].

The cutaneous manifestation of LCH commonly presents as multiple erythematous skin plaques involving the scalp, face, and trunk. However, the ophthalmic involvement of LCH is scarcely reported. In this report, we present an unusual case of LCH which masquerades as a non-resolving eyelid chalazion initially, follows up by disseminated skin and bony involvement.

Case Presentation

A 17-month-old girl presented with a crusted nodule over her left upper eyelid for six months. This lesion was diagnosed as chalazion and treated with topical antibiotic ointment initially. However, the eyelid lesion increased in size rapidly. Furthermore, disseminated reddish-brown papules over

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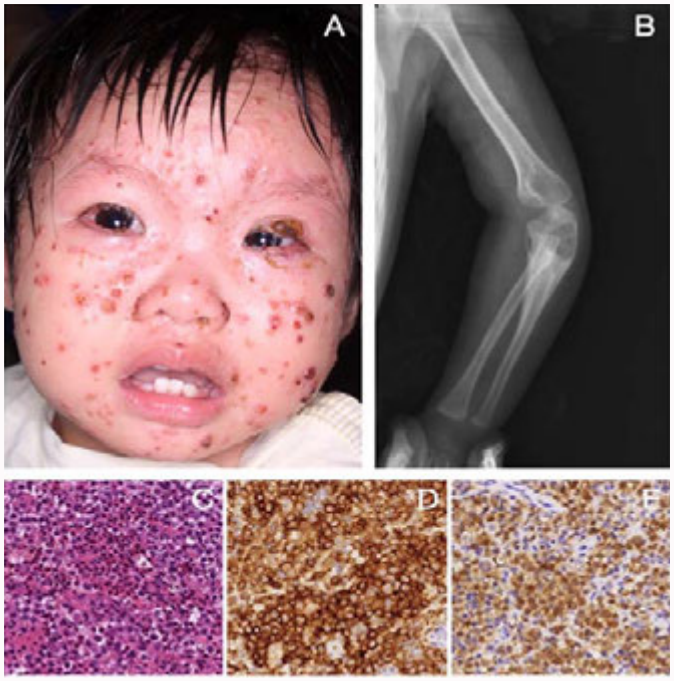

Figure 1: Clinical and histologic ocular findings. A) Photographs of the patient at the first visit reveals the left upper eyelid mass and disseminated skin lesion. B) Radiographic exam demonstrated an osteolytic lesion over her left proximal ulna. C) Microscopic photo reveals atypical histiocytic cells with eosinophilic cytoplasm, convoluted nuclei, delicate chromatin and inconspicuous nucleoli. (H&E, ×400). D) Immunohistochemical staining shows strong positivity for CD1a (×400). E) Anti-S100 staining shows highly reactive atypical histiocytic cells (×400).

her face, trunk, extremities, and scalp further developed two months later. She was then brought to our clinic for further evaluation. The patient had no relevant past medical history or localized trauma and received regular vaccination.

Physical examination showed multifocal ulcerative lesions on the face, left upper eyelids, trunk, extremities and nails (Figure 1A). Swelling of left elbow was also noted incidentally during exam. Initial hematological investigations were normal. While radiographic exam revealed an osteolytic lesion over her left proximal ulna (Figure 1B). Due to the unusual presentation of eyelid lesion, an incisional biopsy was arranged.

The histopathologic examination of the specimens revealed abundant histiocyte with eosinophilic cytoplasm and grooved nuclei (Figure 1C). Immunohistochemical stain showed the majority of the infiltrate is reactive for CD1a (Figure 1D) and S100 (Figure 1E), which is consistent with the diagnosis of LCH. Further molecular analysis for BRAF mutation in V600E is negative. Other systemic workups including urinalysis, abdominal sonography, and positron emission tomography scan revealed no other organ involvement except for the skin and bone.

The patient was treated according to Taiwan Pediatric Oncology Group (TPOG) LCH protocol, which included six weeks of prednisone and vincristine, followed by one year of maintenance therapy with 6-mercaptopurine and methotrexate. The cutaneous and bony lesions regressed after chemotherapy. There has been no disease recurrence nor other organ involvement within 18-months follow-up period.

Discussion

Langerhans Cell Histiocytosis (LCH) was previously believed to be derived from the Langerhans cells of skin and mucosa. However, recent molecular analysis revealed that the LCH lesion are more likely to be composed of the myeloid progenitor cells from bone marrow [5].

The clinical behavior of LCH is remarkably heterogenous, ranging from self-resolving single-system disease to refractory multisystem involvement with mortality rate up to 20% [4]. The most commonly affected organ is bone (80%), followed by skin (33%) and pituitary gland (25%) [4]. The involvement on liver, spleen, bone marrow, lungs, lymph node and central nervous system had also been reported [4]. The cutaneous involvement of LCH usually serves as an indicator of multisystemic disease, as approximately 87% to 93% of patients also exhibit systemic involvement [6]. The clinical presentation of LCH over skin also varies from single circumscribed erythematous papule to generalized involvement. The diverse cutaneous presentation contributes to high rate of misdiagnosis, such as diaper dermatitis, Molluscum contagiosum, seborrheic dermatitis, psoriasis, cutaneous lupus and atopic dermatitis. While the ophthalmic involvement of LCH is scarcely reported, the most common ophthalmic presentation is rapidly progressive proptosis or eyelid swelling with orbital involvement [7]. Eyelid involvement is rare and often masquerades as treatment-refractory chalazion [8,9]. In our case, the initial presentation of LCH was a non-resolving eyelid chalazion follows up by disseminated skin and bony involvement.

Since the clinical manifestations varies, the diagnosis of LCH is ultimately based on the histopathological findings [1]. The hallmark of LCH is the accumulation of histiocytes which contain abundant cytoplasmic vacuoles and show positivity for CD1a, CD207, and S-100 [1]. The presence of tennis-shaped organelles under electron microscopy, known as Birbeck granules, also confirms the diagnosis of LCH [1]. Once the diagnosis is established, systemic work-up should be performed, since the treatment of LCH depends on the extent and severity of disease process [10]. For isolated skin lesion, conservative

therapy with topical corticosteroid or surgical excision may be sufficient [6]. However, for disseminated lesion with multisystem involvement, chemotherapy and radiation therapy should be considered [1,10]. There is no consensus on the chemotherapy protocols for LCH, but a combination of systemic corticosteroid and vinblastine is often recommended as first-line regimen [1,10]. The prognosis is generally good for patients with single-system LCH, the estimated 5-year survival rate was more than 95% [10]. However, poor prognosis was observed in patient with BRAF mutations in V600E and risk organ involvement, including liver, spleen and bone marrow [1,10]. In our case, there is no BRAF mutation in V600E nor involvement of risk organ. During the 18-months follow-up period, there has been no disease recurrence nor other organ involvement.

In conclusion, despite LCH is a relative rare disease, it should be taken into consideration in the differential diagnosis of non-resolving eyelid lesions. Complete systemic evaluation and genetic survey over BRAF mutation are warranted once the pathological diagnosis of LCH is established. The prognosis is generally good if there was no risk organ involvement.

References

1. Allen CE, Merad M, McClain KL. Langerhans-cell histiocytosis. N Engl J Med. 2018;379(9):856-68.
2. Kemps PG, Zondag TCE, Arnardottir HB, Solleveld-Westerink N, Borst J, Steenwijk EC, et al. Clinicogenomic associations in childhood Langerhans cell histiocytosis: an international cohort study. Blood Adv. 2023;7(4):664-79.
3. Salotti JA, Nanduri V, Pearce MS, Parker L, Lynn R, Windebank KP. Incidence and clinical features of Langerhans cell histiocytosis in the UK and Ireland. Arch Dis Child. 2009;94(5):376-80.
4. Haupt R, Minkov M, Astigarraga I, Schafer E, Nanduri V, Jubran R, et al. Langerhans Cell Histiocytosis (LCH): Guidelines for diagnosis, clinical work-up, and treatment for patients till the age of 18 years. Pediatr Blood Cancer. 2013;60(2):175-84.
5. Allen CE, Li L, Peters TL, Leung HC, Yu A, Man TK, et al. Cell-specific gene expression in Langerhans cell histiocytosis lesions reveals a distinct profile compared with epidermal Langerhans cells. J Immunol. 2010;184(8):4557-67.
6. Ehrhardt MJ, Humphrey SR, Kelly ME, Chiu YE, Galbraith SS. The natural history of skin-limited Langerhans cell histiocytosis: A single-institution experience. J Pediatr Hematol Oncol. 2014;36(8):613-6.
7. Alzahem T, Alkatan HM, Maktabi AM, Alsulaiman N, Cruz AAV. Ophthalmic histiocytic lesions (diseases of the L group): A multicenter clinicopathological study of 18 cases and review of literature. Eur J Ophthalmol. 2023;33(1):556-66.
8. Ryu HK, Kim JM, Cho WK, Lee JU. A rare case of upper eyelid Langerhans cell histiocytosis. Korean J Ophthalmol. 2022;36(5):466-7.
9. Lo C, Patel P, Charles NC. Langerhans cell histiocytosis presenting as a nodulo-ulcerative eyelid lesion. Ophthalmic Plast Reconstr Surg. 2017;33(3S Suppl 1):S51-S2.
10. Cui L, Wang CJ, Lian HY, Zhang L, Ma HH, Wang D, et al. Clinical outcomes and prognostic risk factors of Langerhans cell histiocytosis in children: Results from the BCH-LCH 2014 protocol study. Am J Hematol. 2023;98(4):598-607.