OLGU SUNUMU CASE REPORT

DOI: 10.5336/ophthal.2020-79302

Langerhans Cell Histiocytosis with Orbital Extension Spontaneous Perforation: A Rare Case

Orbita Uzanımlı Spontan Perforasyonlu Langerhans Hücreli Histiyositoz: Nadir Bir Vaka

Fatma SAVUR[a], Havva KALDIRIM[a], İlker GÜLEÇ[b]

[a]Department of Ophthalmology, İstanbul Health Sciences University Bağcılar Training and Research Hospital, İstanbul, TURKEY
[b]Department of Neurosurgery, İstanbul Health Sciences University Bağcılar Training and Research Hospital, İstanbul, TURKEY

ABSTRACT Langerhans cell histiocytosis (LCH) is a rare disease with variable clinical presentation, resulting from clonal neoplastic proliferation of Langerhans cells. Clinical findings differ according to the affected organ. Although LCH is rare among orbital tumors, it should be kept in mind differential diagnosis of masses, especially in pediatric patients. A rare case of LCH with intracranial and orbital involvement shown by computed tomography and magnetic resonance imaging and diagnosed by histopathological examination is presented. During the follow-up, the patient developed spontaneous perforation. To our knowledge, this is the first case of orbital LCH to develop spontaneous perforation.

Keywords: Langerhans cell histiocytosis; orbita; perforation

ÖZET Langerhans hücreli histiyositoz (LHH), Langerhans hücrelerinin klonal neoplastik proliferasyonundan kaynaklanan, değişken klinik tabloya sahip nadir bir hastalıktır. Klinik bulgular, etkilenen organa göre farklılık gösterir. Orbital tümörler arasında LHH nadir olmakla birlikte orbital kitlelerin ayırıcı tanısında, özellikle çocuk hastalarda akılda tutulmalıdır. Bilgisayarlı tomografi ve manyetik rezonans görüntüleme ile gösterilen ve histopatolojik inceleme ile tanı konulan, intrakraniyal ve orbital tutulumu olan nadir bir LHH olgusu sunulmuştur. Hastada, takip sırasında spontan perforasyon gelişmiştir. Bildiğimiz kadarıyla bu olgu, spontan perforasyon gelişen ilk orbital LHH vakasıdır.

Anahtar Kelimeler: Langerhans hücreli histiyositoz; orbita; perforasyon

Langerhans cell histiocytosis (LCH) is the clonal neoplastic proliferation of Langerhans-type cells expressing CD1a, langerin and S100 protein and showing Birbeck granules in ultrastructural examination.[1] The skeleton, and skin are the most frequently involved organs. LCH is more common in the pediatric age group, most cases being diagnosed before the age of 15. [2,3] Its prognosis and treatment depend on the location and severity of the disease. Although survival rates for patients without organ dysfunction is excellent, mortality rates for patients with organ dysfunction may reach %20. [4] A rare case of orbital LCH with spontaneous perforation and intracranial extantion, diagnosed by histopathological examination, is presented.

CASE REPORT

A 11-year-old girl had a left upper eyelid swelling and pain lasting for one week (Figure 1a). Visual acuity was 0.00 logMAR in both eyes on ophthalmologic examination. Eye movements were normal in both eyes. There was a slight swelling and redness in the left upper eyelid. The mass was rigid and immobile with palpation. No pathology was observed in the anterior segment and fundus examination. Computed

Correspondence: Fatma SAVUR
Department of Ophthalmology, İstanbul Health Sciences University Bağcılar Training and Research Hospital, İstanbul, TURKEY/TÜRKİYE
E-mail: drfatmagezer@hotmail.com

Peer review under responsibility of Turkiye Klinikleri Journal of Ophthalmology.

Received: 30 Sep 2020 ***Received in revised form:*** 20 Nov 2020 ***Accepted:*** 23 Nov 2020 ***Available online:*** 31 Dec 2020

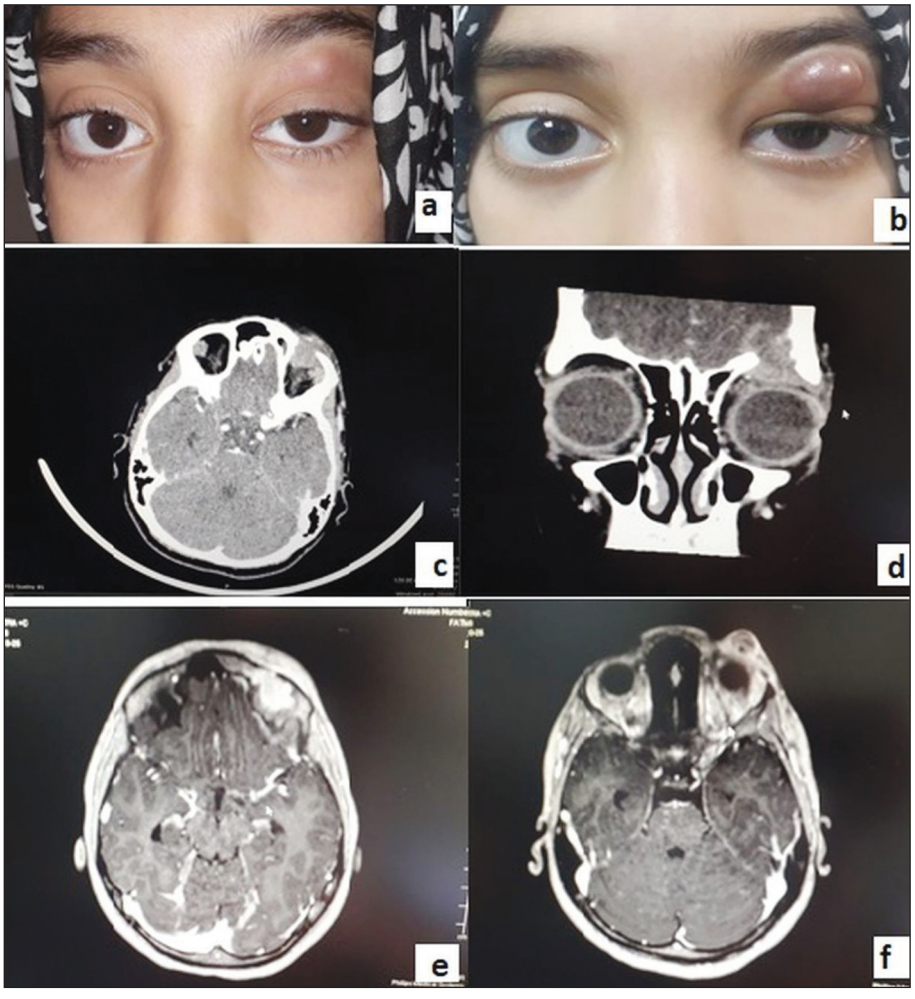

FIGURE 1: a) Photo of the patient on admission left upper eyelid swelling, redness and mild ptosis; **b)** Photo of the patient at week 1: rapid increase in swelling and redness of the left upper eyelid; **c, d)** Computed tomography demonstrating the orbital lesion with bone erosion. c- infiltration of the tumor into the left orbit; axial view, d-infiltration of the tumor into the left orbit; coronal view; **e, f)** Magnetic resonance imaging revealed a mass extending to the left orbit, showing intense contrast fixation.

tomography showed osteolytic lesion of the left frontal bone (Figure 1c, Figure 1d). When the intracranial extension of the mass lesion was seen on the computed tomography image, neurosurgery was consulted. Dramatic growth was observed in the mass after 1 week (Figure 1b). Magnetic resonance imaging revealed a tumoral mass lesion in the anterior of the left frontal lobe, which caused destruction of the frontal bone and upper orbital wall with intense contrast material intake. (Figure 1e, Figure 1f). Systemic antibiotic treatment was given for the abscess-like lesion and the operation was recommended. During the preparation of the operation, spontaneous perforation was observed in the patient. Tumor formation involving the orbital ridge was excised with a left frontal craniotomy in the neurosurgery using a left-weighted bifrontal skin flap. Then orbital roof reconstruction was performed with the internal tabula of frontal bone. Pathological findings of the specimen were the presence of Langerhans cells stained by S100 and CDla immunohistochemistry. Systemic investigations revealed no sign of the disease elsewhere. The patient with unifocal orbital LCH required no treatment in addition to mass resection. There was no recurrence in the first postoperative year in follow-up.

DISCUSSION

Although LCH is rare among orbital tumors, about %20 of all LCH cases show orbital presentation and most often represent a unifocal disease.[5] The pathogenesis of this disease is not fully known. LCH may manifest as unisystem or multisystem disease. Unisystem LCH may manifest as unifocal or multifocal disease. Cases with unifocal LCH are usually older children or adults and often present with lytic bone lesions that corrode the cortex. Solitary lesions in other regions are presented with mass lesions or enlarged lymph nodes. Multifocal single system LCH is usually seen in young children and is often accompanied by multiple or sequential destructive bone lesions related to the surrounding soft tissue. Involvement of the head bones and mandible is common. Cranial involvement is followed by diabetes insipidus. Cases with multisystem LCH are infants. It is presented with fever, cytopenia, skin and bone lesions and hepatosplenomegaly.[6]

Organ involvement has no characteristic pattern and bone, lymph nodes, skin, liver, spleen, lung and central nervous system can be involved. LCH is a disease that should be kept in mind in differential diagnosis since it includes many organs. The bone is involved in about %80 of patients with LCH. LCH can involve any bone, but flat bones such as skull, ribs, and pelvis are more frequently involved. The orbital localization is an uncommon condition is typically unilateral.[7] LCH was also described in the eyelid, conjunctiva, caruncle, as an epibulbar nodule, the optic chiasm, and the orbital apex and cavernous sinus manifesting as cavernous sinus syndrome.[7] The differential diagnosis for orbital LCH includes periorbital or orbital cellulitis, a ruptured dermoid cyst, sarcoidosis, idiopathic orbital inflammatory syndrome, and other malignant processes such as leukemia, neuroblastoma, and rhabdomyosarcoma.[7] In our case, there was an abscess-like lesion with an intracranial extension.

LCH has nonspecific, clinical or radiographic features. The exact diagnosis is based on histological and immunohistochemical examination of biopsy samples. Histological diagnosis of LCH can be confirmed by dendritic cell markers such as CD1a and langerin (CD207) with S100, vimentin, P53, cyclinD1 and Bcl-2.

The treatment of LCH depends on the tumor location, size and surgical accessibility. In view of excellent prognosis in localized skeletal lesions including orbital LCH, the lesions are best managed conservatively.[8] There are reports that unifocal orbital LCH regresses spontaneously.[9,10] Surgical procedures such as biopsy or resection may be preferred to treat solitary bone lesions and limited skin lesions. Radical surgery is not required in localized LCH.[11,12] In previous case series, no recurrence was observed in patients with a single focal lesion in the orbit treated with excision and curettage alone.[13-15] In our patient, the mass grew rapidly like abscess formation. In our case, we preferred the surgical procedure in order to protect other ocular structures, to provide definitive diagnosis and treatment.

In some studies, it has been shown that symptoms improve with intralesional administration of 100-150 mg crystalline methylprednisolone in symptomatic bone lesions.[16,17] Systemic chemotherapy or low-dose radiotherapy (6-10 Gy) is applied for large, symptomatic, or recurrent lesions that are difficult to surgically remove and bear high chances of permanent sequelae.[8,18] Harris and Woo reported, 2 patients with unifocal orbital LCH who underwent biopsy with low dose irradiation and 4 patients who received intralesional steroids with subtotal curettage and no recurrence was observed during the 1-17 year follow-up.[19] The treatment options for disseminated disease include bone marrow transplantation and immunoglobulin therapy.[8,18] Our patient was diagnosed with unifocal orbital LCH. No recurrence was observed during follow-up. In addition to mass resection, the patient did not require any treatment.

As a result; LCH should be kept in mind in the differential diagnosis of orbital tumors, especially in adolescents. In fast growing orbital LCH, it should be known that perforation may develop and treatment method should be determined quickly. In addition, LCH should be remembered in orbital masses presenting with perforation.

Informed Consent

Written informed consent was taken from the parents for reporting this case.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Fatma Savur, Havva Kaldırım;* ***Design:*** *Fatma Savur;* ***Control/Supervision:*** *Fatma Savur;* ***Data Collection and/or Processing:*** *Fatma Savur, İlker Güleç;* ***Analysis and/or Interpretation:*** *Fatma Savur;* ***Literature Review:*** *Fatma Savur;* ***Writing the Article:*** *Fatma Savur;* ***Critical Review:*** *Fatma Savur, Havva Kaldırım;* ***References and Fundings:*** *Fatma Savur;* ***Materials:*** *Fatma Savur, Havva Kaldırım, İlker Güleç.*

REFERENCES

1. Swerdlow SH, Campo E, Harris NL, Jaffe ES, Pileri SA, Stein H, et al. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4th ed. Lyon: IARC; 2008.
2. Sevillano C, Lázaro VM, Couselo JM, Freire J. [Orbital langerhans cell histiocytosis: a multidisciplinary approach]. An Pediatr (Barc). 2010;72(2):160-1.[Crossref] [PubMed]
3. Zhou XD, Song GX, He YJ. [Clinical analysis of orbital histocytosis X]. Zhonghua Yan Ke Za Zhi. 2003;39(11):673-7.[PubMed]
4. Rodriguez-Galindo C, Allen CE. Langerhans cell histiocytosis. Blood. 2020;135(16):1319-31.[Crossref] [PubMed]
5. Moore AT, Pritchard J, Taylor DS. Histiocytosis X: an ophthalmological review. Br J Ophthalmol. 1985;69(1):7-14.[Crossref] [PubMed] [PMC]
6. Aricò M, Girschikofsky M, Généreau T, Klersy C, McClain K, Grois N, et al. Langerhans cell histiocytosis in adults. Report from the International Registry of the Histiocyte Society. Eur J Cancer. 2003;39(16):2341-8.[Crossref] [PubMed]
7. Herwig MC, Wojno T, Zhang Q, Grossniklaus HE. Langerhans cell histiocytosis of the orbit: five clinicopathologic cases and review of the literature. Surv Ophthalmol. 2013;58(4):330-40.[Crossref] [PubMed] [PMC]
8. Hutter C, Minkov M. Insights into the pathogenesis of Langerhans cell histiocytosis: the development of targeted therapies. Immunotargets Ther. 2016;5:81-91. [Crossref] [PubMed] [PMC]
9. Glover AT, Grove AS Jr. Eosinophilic granuloma of the orbit with spontaneous healing. Ophthalmology. 1987;94(8):1008-12.[Crossref] [PubMed]
10. Smith JH, Fulton L, O'Brien JM. Spontaneous regression of orbital Langerhans cell granulomatosis in a three-year-old girl. Am J Ophthalmol. 1999;128(1):119-21. [Crossref] [PubMed]
11. Allen CE, Ladisch S, McClain KL. How I treat Langerhans cell histiocytosis. Blood. 2015; 126(1):26-35. [Crossref] [PubMed] [PMC]
12. Haupt R, Minkov M, Astigarraga I, Schäfer E, Nanduri V, Jubran R, et al; Euro Histio Network. 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.[Crossref] [PubMed] [PMC]
13. Maccheron LJ, McNab AA, Elder J, Selva D, Martin FJ, Clement CI, et al Ocular adnexal Langerhans cell histiocytosis clinical features and management. Orbit. 2006;25(3):169-77.[Crossref] [PubMed]
14. Jinguji S, Oyama T, Yoneoka Y, Fukuda M, Fujii Y. [Case of unifocal orbital langerhans cell histiocytosis in an adult]. No Shinkei Geka. 2011;39(12):1183-8.[PubMed]
15. Holbach LM, Colombo F, Heckmann JG, Strauss C, Döbig C. [Langerhans-cell histiocytosis of the orbit; diagnosis, treatment and outcome in three patients -- children and adults]. Klin Monbl Augenheilkd. 2000;217(6):370-3.[Crossref] [PubMed]
16. Cohen M, Zornoza J, Cangir A, Murray JA, Wallace S. Direct injection of methylprednisolone sodium succinate in the treatment of solitary eosinophilic granuloma of bone: a report of 9 cases. Radiology. 1980;136(2):289-93.[Crossref] [PubMed]
17. Egeler RM, Thompson RC Jr, Voûte PA, Nesbit ME Jr. Intralesional infiltration of corticosteroids in localized Langerhans' cell histiocytosis. J Pediatr Orthop. 1992;12(6):811-4.[Crossref] [PubMed]
18. Helmut G, Nicole G, Milen M, Ulrike P, Elfriede T. Histiocyte Society. LCH-III (2nd Version: 2002). Treatment Protocol of the Third International Study for Langerhanscell Histiocytosis. 2002.[Link]
19. Harris GJ, Woo KI. Eosinophilic granuloma of the orbit: a paradox of aggressive destruction responsive to minimal intervention. Trans Am Ophthalmol Soc. 2003;101:93-103.[PubMed] [PMC]