Spontaneous resolution of an eosinophilic granuloma of the mandible following open biopsy

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Langerhans cell histiocytosis X is a clonal proliferation of dendritic cells of the immune system, which can affect multiple organ systems and range in behavior from a benign inflammatory process to a much more aggressive process. Only few isolated cases have been reported in the jaws. This case represents an example of Langerhans cell histiocytosis X in the mandible, which resolved following incisional biopsy without any further surgical intervention. (Oral Surg Oral Med Oral Pathol Oral Radiol 2016;122:e60-e63)

Langerhans cell histiocytosis X (LCH) is a clonal proliferation of dendritic cells of the immune system that can affect multiple organ systems and range in behavior from a benign inflammatory process to a much more aggressive process.[1-4] The disease, LCH, as originally identified, was grouped into three categories in 1953 by Lichtenstein: (1) Letterer-Siwe syndrome (acute disseminated), (2) Hand-Schuller-Christian syndrome (chronic disseminated), and (3) eosinophilic granuloma (chronic localized).[3,5,6] All three forms of the disease are characterized by a local proliferation of histiocytes known as the Langerhans cell. The Langerhans cell is an antigen-presenting cell of the immune system that is found in the stratum spinosum of the epidermis, lymph nodes, and bone marrow.[6,7]

The acute disseminated form of the disease most commonly appears in infants with skin, mucous membrane, bone, and visceral lesions (liver, spleen, lung) and can be fatal in up to 50% of cases, depending on the organ system involved. The chronic disseminated form has been described to present with a triad of symptoms, which include osteolytic lesions, exopthalmus, and diabetes insipidus. Eosinophilic granuloma (EG) is the most common presentation of LCH often noted as presenting with a solitary osteolytic lesion in older children and adults[6] and accounts for 50% to 70% of LCH cases.[2,3,5,7-9]

EG occurs twice as often in males and most often in the first to third decades.[3,4] The disease presents as a destructive bony or soft tissue lesion that can be solitary (60%-75%) or multifocal.[6] These lesions show a predilection for the skull and the mandible, often as an initial finding.[1,7] Radiographically, the lesions can vary in presentation from a well-defined radiolucency to an ill-defined radiolucency with destruction of cortical plates, leading many surgeons toward a differential diagnosis that can include a primary or metastatic neoplasm.[2,3,6,7]

On histologic evaluation, an EG demonstrates Langerhans cells and eosinophils, with an underlying infiltration of mixed inflammatory cells.[8,9] A diagnosis of LCH is confirmed through immunohistochemical staining for S-100 protein and CD1-a, which help differentiate LCH from other histiocytic processes. On electron microscopy, Langerhans cells also exhibit Birbeck granules within their cytoplasm, which so far has been considered pathognomonic for the disease.[4,6,7]

In this case report, a 17-year-old male exhibited an ill-defined radiolucency of the posterior right mandible, which was ultimately diagnosed as LCH and resolved spontaneously without further treatment. Because of the destructive nature of the lesion, the differential led the treating surgeon to believe this was not a benign process. An initial differential diagnosis had included systemic processes that had manifested within the mandibular angle. This initial thought process was developed secondary to the ill-defined radiographic borders of the lesion and the lack of an associated tooth with the lesion. The differential diagnosis for this lesion included sarcoma, metastatic disease, and a salivary neoplasm. Although there are reports of spontaneous remission of bony lesions in LCH, only five cases of LCH in the facial bones have been reported to have spontaneous remission.[8-10]

CASE REPORT

A 17-year-old, well-formed, healthy, Caucasian male presented to the Montefiore Medical Center Oral and Maxillofacial Surgery clinic for evaluation of a mass overlying the right mandibular angle that had been slowly enlarging over the last 2 months. The patient reported mild pain in the region, but no change in sensation. The patient had no systemic complaints at the time of presentation. No significant past

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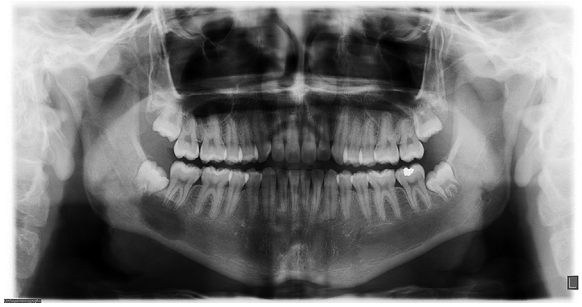

Fig. 1. Initial orthopantomograph from January 15, 2013, showing an ill-defined radiolucency of the right posterior mandibular body.

medical history was reported, and there was no family history of blood disorders or cancer.

On initial orthopantography, an ill-defined radiolucency was seen apical to tooth #31 and adjacent to impacted tooth #32 (Figure 1). The initial cone beam computed tomography (CBCT) demonstrated an ill-defined radiolucency in the right mandibular angle extending to within 3 mm of the inferior border of the mandible. No direct association with the apex of #31 or with impacted tooth #32 could be appreciated. The inferior alveolar canal could be seen displaced lingually, with loss of its cortical border in the region of the lesion. A loss of the lingual and buccal cortices could be noted, buccal more than lingual, with reactive periosteal bone formation along the intact buccal cortex surrounding the lesion (Figure 2).

An incisional biopsy was performed through an intraoral, buccal approach under intravenous sedation. Multiple samples were taken and sent for histologic evaluation. No teeth were extracted during the procedure. Histologic evaluation identified large, pale-staining, Langerhans-type histiocytes with reniform and cleaved nuclei in a background that contained numerous eosinophils (Figure 3). On immunohistochemical staining, the sample was positive for both CD1-a and S-100, confirming the diagnosis of LCH (Figure 4). The patient was referred to the pediatric oncologist at Montefiore Medical Center for a full workup, including full radiographic skeletal survey, bloodwork, and urinalysis.

The oncologic workup revealed no intrabony lesions, serum abnormalities, or evidence of polydipsia or polyuria. The patient denied any constitutional symptoms; however, he reported significant weight loss, which was determined to be intentional as he was training for the Marines Corps. The pediatric oncologist concluded that the mandibular lesion was solitary and no systemic involvement could be appreciated. As the lesion was only locally noted, a recommendation was made for local resection of the mandibular lesion and close monitoring for recurrence. The possibility of chemotherapy was suggested by the oncologist if the disease recurred after initial surgical excision.

Upon further discussion with the pediatric oncologist, it was decided that the mandibular lesion would be monitored with serial CBCT scans every 3 to 6 months, since the mandibular lesion was solitary and there was no systemic involvement. This decision was made with the knowledge that intrabony lesions of LCH have been reported to resolve

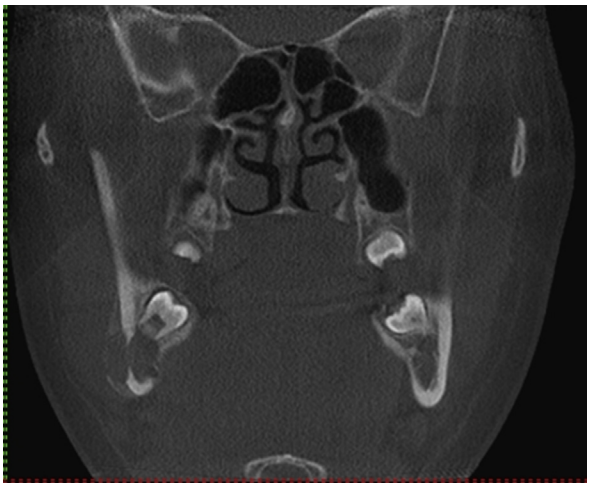

Fig. 2. Coronal view of a cone beam computed tomography scan obtained on January 17, 2013, before biopsy of the lesion. A radiolucent lesion with ill-defined borders can be appreciated apical to impacted tooth #32, with destruction of both buccal and lingual cortices. Reactive periosteal bone formation can be noted along the buccal cortex adjacent to the lesion.

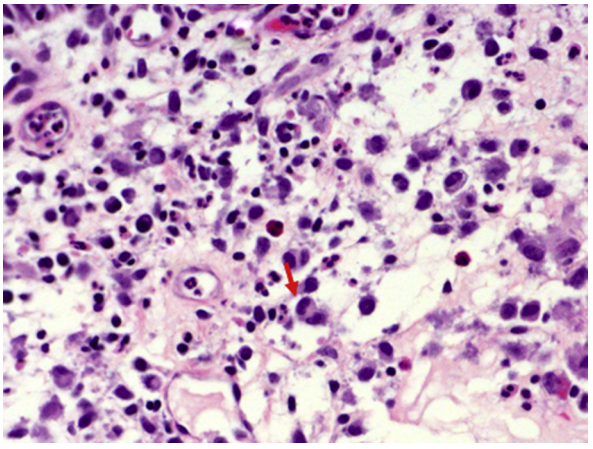

Fig. 3. Hematoxylin and eosin staining of the specimen at ×20 magnification. The sample shows large, pale-staining Langerhans histiocytes with reniform and cleaved nuclei in a background that contains numerous eosinophils. The red arrow portrays a representative cell. *A high-resolution version of this slide for use with the Virtual Microscope is available as eSlide: VM01479.*

spontaneously after biopsy or without intervention. A CBCT scan was obtained 2 months following the initial biopsy, and it revealed new ossification along the periphery of the lesion (Figures 5 and 6). Because healing could be seen within the lesion, a follow-up CBCT was scheduled to be performed 3 to 6 months later. A CBCT scan 4 months later revealed almost complete ossification of the lesion (Figures 7 and 8). At 10 months after the initial biopsy, return of normal bony trabeculation could be appreciated on the cross-sectional radiograph of the right mandible (Figure 9). The patient's