

CASE REPORT

Eosinophilic Granuloma of Mandible: A Report of Two Cases

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ABSTRACT

Eosinophilic granuloma of bone is a destructive osseous lesion characterized by large number of histiocytes. It is classified as one of the triad of nonlipid reticuloendothelial disorders, the Langerhans cell histiocytosis (LCH). The clinical manifestation varies from a localized lesion (eosinophilic granuloma) to a systemic disease. Typically, there is bone involvement and less frequently lesions might be found in other organs, particularly the lungs, liver, lymph nodes, skin and mucosa. It is curable by surgery, radiotherapy, chemotherapy, steroid injections or a combination of these techniques. We report two patients with eosinophilic granuloma exclusively limited to the mandible with review of features, the choice of method of treatment and outcome of the disease. Its diagnosis is based on clinical, radiographic and histopathological features. A complete excision of the lesions was performed in one case while the other was treated with low dose radiotherapy. Histopathological examination and IHC of the excised specimen confirmed diagnosis.

Keywords: Eosinophilic granuloma, Langerhans cell histiocytosis, Histiocytosis-X.

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INTRODUCTION

The term 'eosinophilic granuloma of bone' was introduced by Lichtenstein and Jaffe in 1940.¹ Eosinophilic granuloma is one of the rarest bone tumors representing less than 1% of them. In 90% of reported cases, it appears in children under the age of ten. There is a certain predilection to males in the ratio of 2:1.² It is a localized and mild form of the histiocytosis-X group of diseases, which also encompasses the Hand-Schuller-Christian syndrome and Letterer-Siwe syndrome.³ The above grouping has been based on the similarities of the histopathologic appearance of the histiocytic and eosinophilic proliferation. These

diseases are thus collectively known as Langerhans cell histiocytosis (LCH),⁴ formerly known as histiocytosis-X.¹

Eosinophilic granuloma may not present physical signs or symptoms in clinical observation and most times is discovered during routine radiographic examination. Sometimes there may be localized swelling, pain or tenderness. The lesion may occur in the jaw and overlying soft tissues of the mouth. Although the skull and mandible are common regions of involvement, femur, ribs, humerus, and other bones may also be affected. Loss of superficial alveolar bone and localized periodontitis are common early forms of the disease. Unifocal eosinophilic granuloma of bone has a destructive nature, and is well demarcated, roughly round or oval in shape. The etiopathogenesis of LCH is not clear. Although LCH might represent a reactive response to a defect in cell-mediated immunity recent clonality studies have suggested that this is a neoplastic disorder. Bone, lungs, liver, lymph nodes, spleen, hematopoietic tissue, and mucocutaneous tissues might all be affected.³ The severity and prognosis of the disease is in turn dependent on the type and extent of organ involvement. Bone is the tissue most frequently affected. Majority of patients present with solitary or multiple bone lesions, and involvement of the craniofacial bones (particularly the mandible) is not unusual.

Under the direction of the Writing Group of the Histiocyte Society, LCH has been adopted as the appropriate clinicopathologic designation that encompasses and essentially replaces the previous historical terms used to classify this category of abnormal histiocyte proliferation.⁵ However, many authors continue to utilize the term eosinophilic granuloma of bone; as this latter terminology is still both historically and clinically relevant. We present two patients with eosinophilic granuloma confirmed by histological and immunohistochemical studies to be LCH without any evidence of involvement of other organs.

CASE REPORTS

Case 1

A 27-year-old male patient reported to our hospital with a complaint of pain and swelling of the left lower jaw since 6 months. The patient was a chronic smoker. Four weeks ago this patient had visited a local dentist with complaint of a loose tooth, diagnosis of a periapical pathology was

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made and he got his tooth removed. After 2 weeks, the patient started experiencing dull continuous pain in the same region for which he decided to consult our hospital. The patient also complained of paresthesia along the distribution of the left inferior alveolar nerve. Extraorally, a mild swelling was evident at the left body and angle of mandible regions (Fig. 1). Palpation revealed it to be multi locular, expansion of the buccal cortical plate and egg shell cracking was felt near the lesion. Postextraction a nonhealing ulcer was seen on the alveolar ridge in region of 38. No fever, elevated regional temperature, or lymphadenopathy was recorded with no history of diabetes. The patient was referred for an orthopantomograph (OPG). It showed well-defined alveolar bone lesions with a Scooped-out effect involving the left body and ramus regions of his mandible (Fig. 2). Its borders were irregular and no calcification or ossifications in the lesion was noted. Incisional biopsy was done under local anesthesia and the specimen was sent for histopathological exami-

nation which demonstrated typical Langerhans' cells with pale cytoplasm and eccentric nuclei (Fig. 3). Loose connective tissue stroma showed numerous suspended neutrophils and small mature lymphocytes. Immunohistologically, these cells were stained and found to be positive for CD1a (Fig. 4). The patient preferred radiotherapy and a dose of 20 Grays in 10 fractions over a duration of 2 weeks was given. This reduced the spread of the osteolytic process. Radiographs after 6 months revealed new bone formation in the area of the lesion and closure of the nonhealing ulcer was noted (Fig. 5).

Case 2

A 42-year-old male patient reported to our hospital with a complaint of pain in his lower jaw since 6 months and multiple mobile teeth. Patient was a known hypertensive and on medications for the same, he had no other systemic diseases. He also did not have any history of tobacco consumption in smoke or smokeless forms. There was



Fig. 1: Clinical photograph at the time of presentation showing mild swelling over left body of mandible (case 1)



Fig. 2: Orthopantomograph showing well-defined punched-out lesions with a scooped-out effect involving the left body, angle and ramus regions of the mandible (case 1)

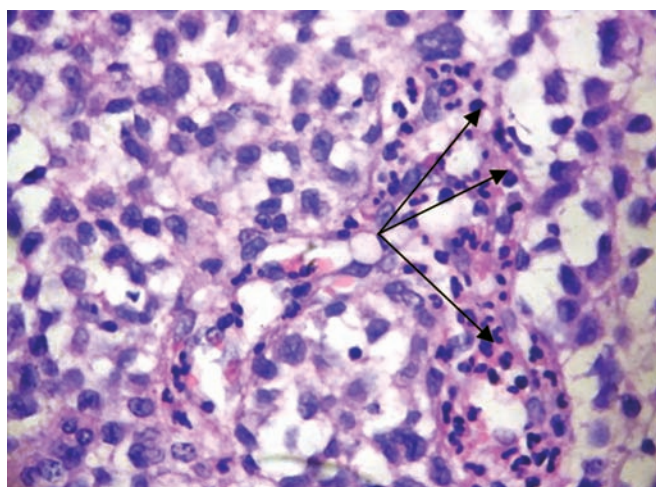


Fig. 3: High power histological photograph showing infiltrate with mononuclear cells intermingled with numerous Langerhans cells (case 1)

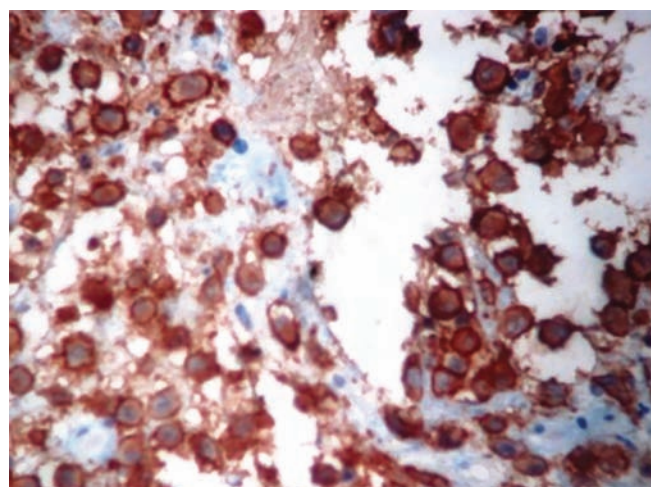


Fig. 4: CD1a positive stained cells were seen on immunohistochemical evaluation (case 1)

no remarkable finding on extraoral examination (Fig. 6) except a tingling sensation of his lower lip. On intraoral examination, the lower jaw revealed multiple loose teeth giving an impression of periodontitis.

Radiographs OPG revealed multiple irregular punched out radiolucent lesions bilaterally in the mandibular body and symphysis region. It gave the impression of an osteolytic lesion that had destroyed the supporting alveolar bone, showing the classically described 'floating in air' appearance to the involved teeth (Fig. 7). Radiographs of the skull, chest and pelvic regions revealed no lesions. Incisional biopsy was done under local anesthesia and specimen submitted for histopathology. After histopathologic review, it was diagnosed as eosinophilic granuloma. Microscopically, the hematoxylin-eosin stained sections demonstrated a sheet of Langerhans' cells mixed with variable numbers of eosinophils characterized by large pale cytoplasm, containing small dark granules (Fig. 8).

Immunohistochemical staining showed that the histiocytic cells were positive for the CD1a markers.

Surgical resection of the mandible from right side angle to left ramus was done as the lesion had extended upto the inferior border and a titanium reconstruction plate was placed as a spacer (Fig. 9). Postoperative wound healing was uneventful. Mild reduction of lower facial height was noted (Fig. 10). No signs of infection or recurrence were noted after a period of 1 year.

DISCUSSION

Eosinophilic granuloma is a benign and localized form of LCH. It may present as solitary or multiple lesions primarily involving the skull and the facial bones. The condition of eosinophilic granuloma of bone was first described by Wassmund and Anders.⁶ According to literature,⁷⁻⁹ pain is the chief complaint of patients with eosinophilic granuloma of bone. Other clinical symptoms include hypermobility of teeth, bleeding gums, toothaches, headaches, swelling, pathologic fracture and sensory disturbances.⁷ In our present cases, the patient's chief complaint was pain and mobility of teeth. The radiographic diagnosis is speculative, because the appearance



Fig. 5: Closure of the nonhealing ulcer



Fig. 6: Photograph at the time of presentation (case 2)



Fig. 7: Orthopantomograph revealing multiple punched out radiolucent lesions bilaterally in the mandibular body and mental regions giving the classically described 'floating in air' appearance to the involved teeth (case 2)

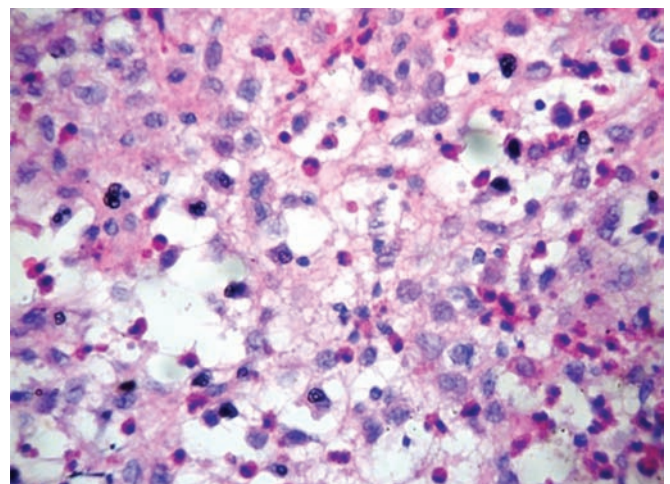


Fig. 8: Histiocytes were the predominant cells, characterized by large pale cytoplasm (case 2)



Fig. 9: Postoperative OPG showing resection of mandible from right angle to left ramus and reconstruction plate placed as a spacer (case 2)



Fig. 10: Postoperative patient's profile (case 2)

is nonspecific. In the mandibular body, there may be teeth enveloped in radiolucent lesional tissue ('floating teeth')^{3,9-12} with cystic expansion and central rarefaction of the bone. Similarly in our second case, the OPG demonstrated a classic appearance of teeth floating in air. The presenting signs and symptoms of eosinophilic granuloma are not pathognomonic and its radiological appearance is not diagnostic.¹³ The lesion may be confused with chronic inflammation, odontogenic cyst, osteomyelitis, giant cell granuloma, malignant lymphoma or metastatic bone disease, etc.^{3,7} A final diagnosis is established only after histopathological examination.^{3,13,14}

If the underlying process is not detected and treated, the granulomatous proliferation will extend to neighboring areas, resulting in wider bony and dental destruction,¹⁵ sometimes pathological fracture of jaw. The wound does not heal¹⁶ and a hollowed area persists often opening into the oral cavity leading to secondary epithelization as seen in case 1.

There are several accepted forms of treatment for this lesion. Accessible lesions are best managed by curettage^{7,8,13,14} which can be done intraorally. Some studies have reported good response of bone to intraosseous steroid injection.^{3,13} When these lesions are not accessible for curettage or if the operation will result in a gross disfigurement, low dose radiation of 6 to 10 Gy or chemotherapy can be used.^{3,7,8,13} The recurrence rate of eosinophilic granuloma ranges from 1 to 25%, depending on the treatment protocol and the location of the lesion.^{3,17} Postovsky¹⁸ recommends mandibulectomy in case of larger lesions and recurrence.

Alkylating agents, nitrogen mustard, chlorambucil and aminopterin or methotrexate) have been used with good results.¹⁴ Recently, vinblastine and vincristine¹⁹ have been employed with promising results. Vinblastine is

superior to the alkylamines in many respects, as it is tolerated well in high doses and its toxicity is relatively low. Side effects include: leukopenia, thrombocytopenia, neuritis, alopecia and phlebitis. In chemotherapeutic agents, the most effective control of this aggressive disease seems to be achieved by a combination of vincristine sulphate with prednisone and small doses of radiotherapy to the affected areas.

Our patient received low dose of radiation, i.e. 20 gray's in 10 fractions. This dose stopped the osteolytic process and further spread of the lesion. The second case highlights the problem that the surgeon faces due to late presentation, as the osteolytic process had already encroached and destroyed the cortical bone of the lower border of mandible making conservative curettage impossible hence the treatment opted was mandibular resection from right angle to the left ramus.

At present, the best accepted mode of treatment of these aggressive lesions is enucleation and curettage in easily approached areas while radiotherapy is reserved for inaccessible regions.

CONCLUSION

The initial presentation of eosinophilic granuloma is often ignored. The disease appears either to be symptomless or to exhibit manifestations of a very minor degree, the commonest complaint starts with pain or mild swelling. The sites of the lesions present no particular pattern. A solitary lesion is more prevalent than those cases with multiple lesions. Only a surgically obtained biopsy leads to definitive diagnosis and thus selection of appropriate treatment modality. The prognosis in single bone involvement is excellent and it is best treated surgically or in combination with radiotherapy.

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