Radiolucent lesion of the anterior mandible

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CLINICAL PRESENTATION
A 22-year-old white female presented with a solitary, well circumscribed, round radiolucency 15 mm in diameter, with a largely sclerotic border in the mandibular midline, seen on Panorex (Fig 1) and occlusal films. The lesion was asymptomatic and of unknown duration, and there was no detectable expansion of the jaw. The incisor teeth were nonrestored, noncarious, and vital. In addition, the patient denied previous tooth extraction or other trauma in the area. A positive history of smoking was reported. Past medical history was significant for difficulty with weight control and for a bilateral reduction mammoplasty operation. There was no history of any form of neoplastic disease.

DIFFERENTIAL DIAGNOSIS
A differential diagnosis, based on the clinical and radiographic presentation, would include central giant cell granuloma, an early benign cemento-osseous lesion, simple bone cyst, odontogenic keratocyst, ameloblastoma, glandular odontogenic cyst, odontogenic myxoma, and focal osteoporotic bone marrow defect.1,2,3

Central giant cell granuloma is an intraosseous lesion that often affects the anterior portion of the jaws, frequently involving the midline. Most occur in females, and approximately 60% of cases are seen in patients younger than 30 years of age. The lesion may be detected on routine radiographs as a well-circumscribed, unicocular or multilocular radiolucency. It may be associated with expansion of the jaw. Microscopically, it consists of numerous multinucleated giant cells with a cellular or loosely arranged background stroma. Areas of hemorrhage and hemosiderin deposition are often present, and foci of osteoid may be seen.1,2

Cemento-osseous lesions often approximate the apices of adjacent teeth. Early lesions typically present as somewhat ill-defined radiolucencies that progress through a mixed radiolucent-radiopaque phase to a primarily radiopaque appearance in later stages. Periapical cemento-osseous dysplasia is usually associated with the apices of the mandibular anterior teeth and occurs primarily in middle-aged women of African descent. Microscopically, they show amorphous spheroidal to irregularly shaped calcified masses, thought to represent aberrant cementum, within a fibrous connective tissue stroma.1,2

The simple bone cyst occurs most commonly in the premolar-molar region of the mandible of young patients between 10 and 20 years of age. It presents as a well-defined radiolucency, often with scalloping of the superior margin between the roots of overlying teeth. The cyst cavity is typically empty, or contains a thin, bloody fluid. Unlike a true cyst, it has no epithelial lining but is lined instead by fibrous connective tissue or granulation tissue with occasional giant cells adjacent to the bone surrounding the cystic cavity.1,2

Odontogenic keratocyst typically arises in the third molar region of the posterior mandible of young adult patients ranging from 20 to 40 years of age. It often presents as a well-defined, corticated radiolucency and
may be unicellular or multilocular in appearance. It is lined by a thin parakeratinized stratified squamous epithelium, which frequently peels away from the connective tissue wall. The cyst cavity may contain keratin.

Ameloblastomas also primarily affect the posterior mandible in patients from 20 to 60 years of age. These neoplasms usually present as a well-defined, unicellular to multilocular radiolucency, often with associated expansion of the affected jaw. Histologically, they show odontogenic-type epithelium with central stellate reticulunlike areas and peripheral ameloblast-like areas, arranged in a variety of patterns.

The glandular odontogenic cyst is a rare lesion, but shows a predilection for the anterior regions of the jaws. It may present as a well-defined unicellular or multilocular radiolucency with a variably sclerotic margin. It occurs more commonly in middle-aged adults. The cyst is lined by epithelium, which sometimes exhibits a papillary surface, may be ciliated, and contains glandlike structures lined by cuboidal cells.

Odontogenic myxomas are uncommon lesions that may occur in the anterior mandible. Radiographically, they may appear as a unicellular or multilocular radiolucency with the latter presentations often featuring a distinctive “soap bubble” or “honeycomb” pattern. These tumors consist primarily of loose, myxoid tissue (mucoid ground substance) containing stellate or spindle-shaped mesenchymal cells.

Focal osteoporotic bone marrow defect occurs more commonly in the posterior mandible and presents as a well-circumscribed, but not corticated, radiolucency. Most are found in adult women. Histologically, these lesions contain hematopoietic bone marrow.

Additional differential considerations for this presentation would include other odontogenic lesions and central hemangioma.

**DIAGNOSIS**

At surgery, the lesion was found to be a solid soft tissue mass located entirely within the mandible. It was not associated with the roots of the teeth and could be readily separated from the bony crypt. The submitted clinical diagnosis was “ameloblastoma.” Grossly, a single mass of yellowish soft tissue measuring 0.9 × 0.6 × 0.4 cm was found floating in the formalin solution. Microscopically, the lesion was composed primarily of mature adipocytes. No evidence of hematopoietic tissue was detected in multiple step-sections. Fibrous septa were scanty, and occasional small fragments of vital woven bone were seen. In one focus, stromal hyalinization with calcification was observed (a form of intralesional calcification occasionally denoted as “cockade sign”). There was no significant inflammatory infiltrate but scattered mast cells were identified.
FINAL DIAGNOSIS

The diagnosis was intraosseous (central) lipoma of bone. The postoperative period was uneventful with normal healing 4 months after surgery.

DISCUSSION

The lipoma is a common, benign neoplasm of adipose tissue that may affect any part of the body, although the trunk and proximal extremities are favored sites. It usually presents as a solitary, soft, well-circumscribed, mobile, slow-growing mass. Lipomas may be subcutaneous, where they are typically asymptomatic, or deep, in which case they may cause pressure-related symptoms. They occur more commonly in older individuals, in the 40- to 60-year age range and exhibit no gender or race predilection. Subcutaneous lipomas often affect the upper back, neck, shoulder, and abdomen, but only infrequently arise on the face.6 Despite the large amount of fatty marrow in adults, intraosseous lipomas are quite unusual, and are regarded by Huvos as one of the rarest primary benign tumors of bone.5

Lipoma is one of the more common neoplasms of the oral mesenchymal tissues. The buccal mucosa and buccal vestibule are typical presenting sites; less frequently the tongue, floor of mouth, and lips are involved.1,2 Treatment of oral lipomas is conservative surgical excision. Recurrence is uncommon and malignant change is extremely rare. In the case reported here, the microscopic features are typical of a lipoma. Only 15 cases of intramandibular lipoma have been reported since 1948.3,7-14 Of these, only 2 others have occurred in the anterior portion of the mandible. Interestingly, this is an area where hematopoiesis does not usually occur in the adult.

Microscopically, the lesion must be differentiated from a well-differentiated liposarcoma, primary or metastatic to the jaw. In the present case, there was no evidence of lipoblasts exhibiting cellular or nuclear atypia, nests of multivacuolated cells, atypical spindle cells or giant cells, and the lesion did not exhibit infiltrative growth clinically.

Since intraosseous lipoma of the jaws is an extremely rare diagnosis, it is obviously important to exclude the possibility of hematopoietic bone marrow with prominent areas of fibro-fatty change.3,5 In fact, some authors have suggested that it may not be possible to differentiate intraosseous lipoma from an osteoporotic bone marrow defect.13,15 We feel that both the clinical and microscopic evidence in the current case support the diagnosis of intraosseous lipoma. Clinically, the lesion occurred in the anterior mandible where active hematopoiesis in the adult is minimal. It appeared to be a focal mass characterized radiographically by a discrete radiolucency with a largely sclerotic border, and it was reported to shell out easily at surgery. Further, there was no preceding tooth extraction or trauma in the area, a common feature of osteoporotic bone marrow defect.1 Microscopically, the lesion was predominated by mature adipose tissue and exhibited features often seen in intraosseous lipomas of long bones, including central calcification (seen in one third of all cases) and presence of small bony spicules (seen in two thirds of all cases).5

CONCLUSION

Lipomas are common mesenchymal neoplasms in the oral cavity. However, the diagnosis may be difficult for lesions occurring in bone.3 This paper documents a rare central lipoma of the mandible. The differential diagnosis is discussed. It is important for practicing oral pathologists to recognize rare or unusual variants to ensure accurate diagnosis and appropriate treatment for the patient.

REFERENCES


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