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CASE REPORT

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Osteoid osteoma of mandible

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Abstract

Osteoma are benign osteogenic lesions characterized by proliferation of either cancellous or compact bone and can be central, peripheral or extraskeletal. They may arise in medullary (endosteal) bone or on the bone surface as a polypoid or sessile mass (periosteal). The most common site is in the skull. When affecting the facial bones, they are frequently found in the mandible, the most common locations being the posterior lingual surface and the mandible angle area. Here, a case of osteoid osteoma of the mandible in a 43-year-old female patient is presented with a literature review.

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Osteoid osteoma is a distinct benign entity. It has a nidus less than 2 cm in diameter composed either of immature osteoid, woven bone or a mixture of both. The nidus causes considerable pain and can often provoke reactive sclerosis in contiguous tissue of the host bone. Pain is very characteristic of this lesion and is accompanied by vasomotor disturbances, which occur long before characteristic radiographic and histopathology findings become evident. The lesion occurs predominantly in children, adolescents and young adults between 10 and 25 years of age. It is distinctly rare in patients aged more than 30 years. [1] We report a rare case of osteoid osteoma in a 43-year-old female in mandibular first molar area.

Case Report

A 43-year-old female reported with pain in the lower left posterior region of the jaw since three days. Pain was dull and continuous in nature and aggravated on applying pressure on the lower left posterior teeth. The patient also gave a history of swelling in that area since six months. She also felt a loss of taste sensation from the anterior part of tongue. There was no relevant medical history. Extraoral examination did not reveal any swelling, but left submandibular lymph nodes were tender on palpation. Intraoral examination revealed tenderness on vertical percussion in 35, 36 and 37. There was no clinical mobility of the involved teeth nor were there any periodontal problems, wasting diseases, fracture of the involved teeth or any evidence of caries. Intraoral periapical radiograph of 35, 36, 37 region and orthopantomogram revealed a well-defined small oval-to-round radiolucency surrounded by well-defined corticated border in association with 36. Irregular radiopacity was seen within the radiolucency in the center of the lesion, and it appeared that it was attached to the apical one-third of the Distal root of 36 [Figure - 1],[Figure - 2].

Based on clinical and radiographic findings, benign cementoblastoma, cystic odontome, cementifying /ossifying fibroma, sclerosing osteitis, periapical cemental dysplasia were considered in the differential diagnosis. Surgical enucleation of the lesion was done as a part of the treatment [Figure - 3]. Histopathology of the lesional tissue revealed islands of mature bone containing osteocytes within the lacunae. Osteoblastic rimming was also seen. Scanty connective tissue stroma showed numerous fibroblasts, collagen fibers and vascular spaces [Figure - 4]. The postoperative healing was uneventful.

Discussion

Osteoid osteoma was described as a specific entity by Jaffe in 1935, and since then hundreds of cases have been published which bear out his original criteria: (1) the lesion is a benign neoplasm; (2) it formed large amounts of osteoid which became calcified; (3) there was little evidence to suggest that the lesion was an inflammatory process; (4) there were characteristic X ray changes, such as focal rarefaction and reactive bone, which appeared some distance from the lesion; (5) the lesion occurred most frequently in young adults; (6) pain is an outstanding feature and (7) complete removal is the treatment of choice. [2]

Jaffe described a type of nidus which appeared as a hard osseous core composed of densely set trabeculae of newly formed bone which was atypical. [3] In review by Greene GW *et al.*, [4] cases involving the jaws revealed a type of nidus, more brittle in nature, in which the osteoid tissue predominated. Lind and Hillerstrom classified these two types of nidi and observed that the latter type exhibited active and productive osteogenesis. [5] Lichtenstein related that microscopically, a broken nidus may be mistaken for granulation tissue and that the older lesion showed atypical bone modeled from sheets of osteoid

trabeculae. [6]

Jaffe perceived the initial notable changes in this lesion as an increased vascularization and destruction with replacement by new atypical bone following resorption of the destroyed tissue. The stroma consisted of osteogenic connective tissue containing numerous blood channels. A cortical lesion which produced this bony replacement stimulated the overlying periosteum to lay down new bone of fairly normal architecture. [3]

Some have suggested that the lesion represented developmental aberrations of embryologic anlage. Others have observed that the histologic features of inflammation were associated with lesions that they studied. [7],[8] Pines and associates observed inflammatory changes in a percentage of their cases. [9] The solitary nature of the lesion, the lack of cardinal signs of inflammation and the absence of systemic manifestations were seen by Sherman. In her study, negative cultures were obtained in 19 of the 22 cases. [10] Flaherty, Pugh and Dockerty obtained similar results in their culture studies of this lesion. [11]

The most common symptom of osteoid osteoma was pain; and descriptions of its quality, duration and frequency were consistent throughout several large studies. [12],[13],[14],[15] Golding believed that the marked vascular elements were responsible for both the pain and the osseous reaction common to the lesion. [16] Jaffe regarded the curious pain seen in osteoid osteoma as being attributable to the arteriolar blood supply to the lesion. [3] Sherman and McFarland found that the blood vessels in the reactive fibrous zone surrounding the nidus were accompanied by non-myelinated nerve fibers and postulated that these might be the cause of pathognomonic pain occurring in cases of lesions of this type. [17] Byers described several such lesions where axonal fibers occurred singly or in pairs and coursed irregularly through the stroma. [18] Schulman and Dorfman postulated further that the pain was generated and transmitted by autonomic nerves sensitive to vascular pressure. [19] Localized swelling and tenderness were common clinical findings of this lesion. The pain was often dull and boring and frequently became worse at night. The pain was also described as being referred to a nearby joint; and in one study, this occurred in 27 of the 80 cases. [13]

Majority of the patients found were in the first two decades of life. Freiburger and associates found that 60 of the 80 patients were between the ages of 5 and 20 years, the youngest being 17 months and the oldest, 56 years. [13] Rushton and co-workers found that in 62 patients, 43 lesions occurred before the age of 21; the youngest patient was 21 months and the oldest, 58 years of age. Males were affected between two and three times as often as females. [15]

Jaffe emphasized that the roentgenographic features of the osteoid osteoma were most important in the definitive diagnosis of the lesion. He stated that the nidus was more radiolucent than radiopaque and that it was surrounded by a reactive radiopacity that extended a variable distance from the nidus. The less mature lesion was more likely to have radiopaque nidus, whereas the fully mature osteoid osteoma had a radiolucent nidus. [3] Prichard and McKay reported that calcification of osteoid in the later developmental stages, deposited on calcified trabeculae, resulted in a central opaque body which varied in density as the calcification progressed. [14] Stafne described the roentgenographic features as a radiopaque nidus surrounded by an area of dense bone. [20] Foss, Dockerty and Good also stated that calcification of the radiolucent nidus occurred. [21]

Huvos distinguishes between three distinct evolutionary stages of modification. The initial stage is characterized by the presence of actively proliferating, densely packed prominent osteoblasts in a highly vascularized stroma. In the intermediate phase, the osteoid is deposited between the osteoblasts. In the mature stage of the lesion, the osteoid is transformed into well-calcified, compact trabeculae of atypical bone, which are histologically peculiar since they are neither typically woven nor typically lamellar. [1] Ultrastructural investigation of five cases of osteoid osteoma by Steiner revealed the morphology of the osteoblasts similar to that of normal osteoblasts, although atypical mitochondria can be seen. For comparison, the osteoblasts of benign osteoblastoma were studied and were found to be identical with

those of osteoid osteoma. He concluded that both these lesions are closely related. [22]

Differential diagnosis of osteoid osteoma includes endostosis, intracortical bone abscess, sclerosing forms of osteomyelitis, condensing osteitis, benign osteoblastoma and early stages of Ewing's tumor. [4]

There is general agreement in the literature that the treatment of choice for osteoid osteoma is the complete removal of the nidus. Several instances of regression of the untreated lesion have been recorded in literature. The symptoms regressed following episodes of pain ranging in duration from two to nine years.

Coley related a case in which osteogenic sarcoma developed nine years after X-ray therapy. [23] Gold described a case of osteoid osteoma which recurred twice and subsequently resulted in mandibular resection. [24]

Conclusion

The lack of knowledge concerning the genesis of osteoid osteoma and its confusion with similar lesions in the bone make accurate compilation of data concerning the lesion a difficult problem. It is obvious that the small number of reported cases of osteoid osteoma in maxilla and mandible prohibits any lasting deductions concerning this lesion's behavior in the jaws. It is not unreasonable to assume that its occurrence in these areas is more common than the literature would indicate, and it is hoped that the dentists' awareness of it will result in additional cases being reported in the literature.

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Figures

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