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CASE REPORT

Condensing osteitis in oral region

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Abstract: Condensing osteitis is defined as pathologic growth of maxillomandibular bones characterized by mild clinical symptoms. The bone thickening reflects the impaired bone rearrangement in response to mild infection of dental pulp. This clinical study describes case reports of patients sent to us with radiological findings and clinical examination that failed to lead to definitive diagnosis. On differential diagnosis, all bone tissue tumors were considered. Based on clinical and radiological findings (bone density and trabeculation of the bone) we settled on the diagnosis of osteitis condensans, which allowed us to remain in conservative therapy in terms of observing the patient *(Fig. 3, Ref. 26)*. Full Text (Free, PDF) *www.bmj.sk.*
Key words: osteitis condensans, idiopathic osteosclerosis, radiopaque lesion.

Chronic focal sclerosing osteomyelitis is a lesion characterized by growth of the periodical bone. The bone growth is caused by mild infection of dental pulp. The synonyms are condensing osteitis and sclerosing osteitis (1). Localized areas of sclerotic bone occur in jawbones and can be caused by various agents such as trauma, stress or infection (2). When the occurrence of sclerotic bone is directly caused by infection, the lesion is referred to as condensing osteitis (3). Condensing osteitis is caused by mild chronic irritation of the root canal. Inflamed dental pulp in chronic pulpitis or low-virulence microorganisms in residual necrotic pulp after inappropriate endodontic treatment may act as agents inducing the bone response (4–6).

Histologically, due to impaired bone remodeling, condensing osteitis usually includes normal bone marrow exchange with fibrous connective tissue, occasionally accompanied by inflammatory cell infiltration, de novo bone formation, and presence of bone sequestrum. The inflammatory cell infiltrate is rare and thus can be difficult to detect (7, 8). Condensing osteitis also includes dense trabeculae with a limited area of bone marrow reduced in size, thus possibly resembling the compact bone (9, 10). The bone tissue includes osteoblasts, while bone marrow contains lymphocyte infiltrate (11). It should be noted that condensing osteitis is characterised by dominant osteoblast activity that results in bone apposition. In this case, a mild periapical infection stimulates bone apposition (12) frequently observed in subjects with a very high level of tissue resistance (13).

Radiologically, condensing osteitis appears as a uniform dense radiopaque mass adjacent to the apex of the tooth (6), with well-defined margins and vague transition to the surrounding bone combined with apical loss of lamina dura and widening of periodontal ligament space (4, 14). Condensing osteitis should be differentiated from idiopathic sclerosis, which is mostly unrelated to pathologic lesions of dental pulp, and is neither an inflammatory nor a neoplastic process (15, 16). The etiology of idiopathic sclerosis has not been elucidated yet. It is an asymptomatic intraosseous growth corresponding histologically to a non-inflammatory trabecular bone (17). It should be noted that idiopathic sclerosis does not only occur in jawbones but also in other bones of the body such as pelvis and long bones (18, 19). Some authors consider idiopathic osteosclerosis as a normal anatomic bone variation (20).

Case report

In our study, we included three patients whose radiological findings were disputable and their treating dentists failed to assess the definitive diagnosis.

Case 1 (Fig. 1)

This was a case of a 23-year-old woman with a periradicular process on tooth 36 destructed by caries. The tooth was extracted,

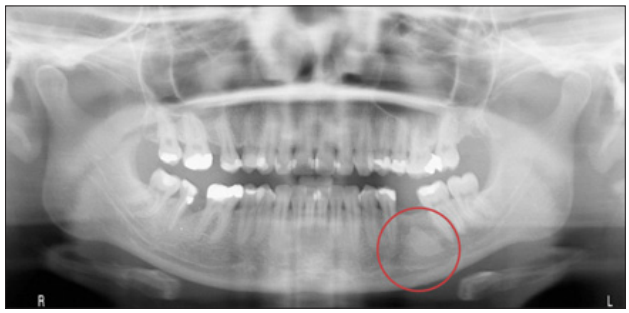

Fig. 1. Ppanoramic x-ray of a 23 years old woman with osteitis condensans in region 36 (Case 1).

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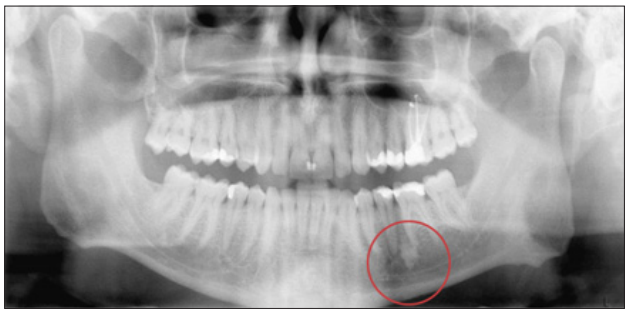

Fig. 2. Panoramic x-ray of a 27 years old man with radiological finding periapicaly between teeth 35 and 36 (Case 2).

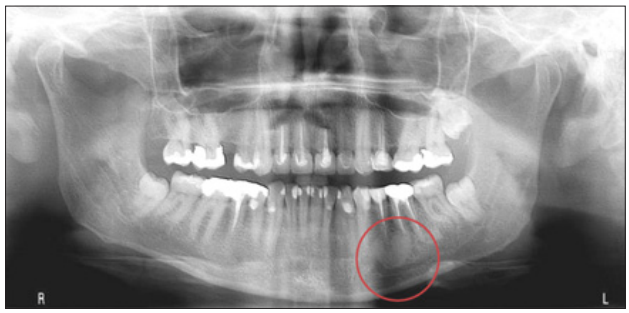

Fig. 3. Panoramic x-ray of a 32 years old woman with radiological findings in the apex region of teeth 35 and 36 (Case 3).

cystogranuloma was surgicaly removed and standard wound treatment was applied without any grafting material. The X-ray was taken one and a half year after the therapy. The patient was subjectively asymptomatic, with no clinical findings of pathological processes in the wound region.

Case 2 (Fig. 2)

This was a case of a 27-year-old man with a periapical radiological finding between teeth 35 and 36. Subjectively, the patient felt occasional indifferent pain in the left mandibular region. Clinically, he had a devitalized tooth 35 with pain percussion and no other pathological clinical findings. Tooth 36 was vital. We classified these findings as osteitis condensans. Tooth 35 was treated with endodontic therapy after the diagnosis had been settled.

Case 3 (Fig. 3)

This was a case of a 32-year-old woman with apical radiological findings in the region of teeth 35 and 36, which had been endodontically treated 2 years prior to this X-ray. The documentation about the treatment of this patient was not available. The information on treatment was passed on to us by the patient. She was sent to us with various dental problems without subjective difficulties in the region of teeth 35 and 36.

We classified all of these cases on basis of anamnesis and radiological findings as osteitis condensans. All patients in this study had no systemic diseases, one of the women used etinylestradiolum, norgestimatum (Cilest®). Despite the fact that estrogens have an impact on bone metabolism, we assume no effect on the described diagnostic unit. The other patients were without any medication. All patients are under clinical and radiological observation.

Discussion

Differential diagnosis of periapical radiopaque lesions, condensing osteitis and idiopathic sclerosis should be taken into consideration. Other periapical radiopaque changes may include various fibro-osseous lesions and periapical cementoma (16, 21). In the study by Williams and Brooks (22), 53.5 % of 187 radiopaque lesions were classified as idiopathic sclerosis, and 46.5 % as condensing osteitis with 91 % of the lesions localized in the mandible and only 9 % in the maxilla. Condensing osteitis is generally an asymptomatic phenomenon that can be detected only on radiographs. Therefore, Williams and Brooks (22) found condensing osteitis in 4.5 %, Wood and Goaz (23) in 8 %, and Marmary and Kutiner (24) in 6.7 % of radiographically examined cases. The study by Marmary and Kutiner (24) showed condensing osteitis developing in the mandible in 91.25 % of cases, which was confirmed by Williams and Brooks (22), who reported mandible to be involved in 91 % of cases. Differences in the rate of condensing osteitis localization have been attributed to variations in blood supply and bone anatomy (26). Condensing osteitis is most commonly localized adjacent to the first mandibular molar, followed by second mandibular molar. This explains high prevalence of caries and massive fillings in lower molars with high consequential probability of the development of pulpitis and pulp necrosis (17, 22, 24). The size of condensing osteitis may vary from 1 mm to 22 mm with mean width and height of 5 mm. As to shape, it may vary from round (32 %) to irregular (64 %) and U-shape in 4 % of cases (22). It should be noted that condensing osteitis develops most frequently around teeth with deep untreated caries, deep filling, or untreated pulp. Such cases commonly lead to chronic pulpitis, which in turn entails reactive osteogenesis in the periapical region. These teeth are usually submitted to prosthetic treatment and burdening with occlusal forces. There is no sex difference in the prevalence of condensing osteitis and idiopathic sclerosis (16, 25).

Regular control radiograph studies play a crucial role in the diagnosis of condensing osteitis. In the management of condensing osteitis, a number of therapeutic options are available and the choice depends on the particular tooth condition.

Conclusion

Description: Condensing osteitis is a reaction to infection. It differs from other periapical inflammatory diseases in that there is bone production rather than bone destruction. The result is a radiopaque lesion. This sclerotic reaction is apparently brought about by good patient's resistance coupled with a low degree of virulence of the offending bacteria. It is more commonly seen in the young and seems to show special predilection for the periapical region of lower molars. The associated tooth is carious or

largely restored. Whether the pulp is irreversibly diseased is not known. The current level of knowledge suggests that the pulp is irreversibly inflamed. Uncommonly, condensing osteitis occurs as a reaction to periodontal infection rather than to dental infection.

Etiology: Infection of periapical tissues by organisms of low virulence.

Treatment: According to the general protocol only the symptomatic cases are to be treated. This is done by endodontic therapy or extraction. The asymptomatic cases with no obvious caries in the associated tooth are to be followed with periodic x-ray examination.

Prognosis: In cases treated by extraction of the offending tooth, the area of condensing osteitis may remain in the jaws indefinitely.

Differential diagnosis: Idiopathic osteosclerosis and cementoblastoma. An abnormal result with electric pulp testing strongly suggests condensing osteitis and tends to rule out osteosclerosis and cementoblastoma

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