

GARRE'S OSTEOMYELITIS: A CASE REPORT

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ABSTRACT

Garre's sclerosing osteomyelitis is a specific type of chronic osteomyelitis that mainly affects children and young adults and is commonly associated with odontogenic infection. Here we are describing a case of Garre's osteomyelitis with a cloaca leading to external sinus tract in a 17-year-old girl, which caused due to long standing carious tooth in lower left jaw. Clinically the patient presented with bony hard, non-tender swelling and the panoramic radiograph and CBVI revealed periosteal sclerotic bone deposition adjacent to the lingual cortex and inferior border of mandible.

KEYWORDS: Osteomyelitis, Garre's, periosteal, cloaca

INTRODUCTION

Garre's osteomyelitis is a non-suppurating sclerosing osteomyelitis, characterized by formation of hard, bony swelling at the periphery of the jaw. It is caused by inert stimulation from low grade infection and frequently occurs in children and young till age of 25 when the osteoblast cells are abundant in the bones.^{4,6} Chronic diffuse sclerosing osteomyelitis, chronic non suppurative osteomyelitis, chronic osteomyelitis with proliferative periostitis, periostitis ossificans are synonymous terms for Garre's osteomyelitis.^{2,1}

Carl Garre, in his original publication did not describe the sclerosing form of osteomyelitis with suppuration, sequestration or fistula formation. Additionally the article does not comment on periostitis, periosteal duplication, or onion-skin appearance.^{9,4} Thus, it may not be appropriate to refer to "Garre's osteomyelitis" as synonymous with "chronic osteomyelitis.". However, it was first described with differentiating features by Hardmeier, Uehlingen, and Muggli (1974) in long bones as primary chronic sclerosing osteomyelitis along with the radiological appearances.^{3,4}

Here we are describing a case of Garre's osteomyelitis with different radiographic appearance than 'onion skin' in a young female patient.

CASE REPORT

A 17-year-old female patient visited our hospital with a complaint of swelling of the left cheek. She had a history of mild pain associated with the lower left first molar since 1 month and treatment for the same in private dental clinic for the same 20 days back where access cavity was prepared and antibiotics were prescribed. Patient is unaware of the names of the medicines.

Clinically, the lesion presented as a hard and fixed swelling on left cheek and inferior mandibular cortical region which was painful on palpation. The skin was of normal color with an extraoral draining sinus tract present inferiorly to the inferior border of left mandible. An endodontically treated non-mobile mandibular left first permanent molar was discovered during an intraoral exam. When tested with percussion, the tooth responded negatively. On lingual aspect swelling was seen extending from mesial aspect of 34 to distal aspect of 36. 35 was partially impacted (lingually) and was out of arch. On palpation, bony hard swelling was noted on lingual cortical plate.



Figure 1 - Intraorally, swelling seen on lingual aspect i.r.t. 35,36,37

Radiographic examination included OPG and CBVI.**OPG –**

OPG revealed a deep carious lesion in the crown portion of the tooth and an ill-defined radiolucent area in the apical region and furcation area of the left mandibular first molar tooth. A well-defined radio-dense structure with central circular radiolucent area is seen below the inferior border of mandible showing focal new bone formation along with linear well-defined radiolucent tract extending from periapical region of mesial root of 36 till inferior border of left mandible. There is resorption of the original cortex of the mandible due to cloaca formation. PDL widening is seen i.r.t. distal root of 36.

CBVI-

When the axial and cross sections were evaluated during the examination with cone-beam computed tomography (CBCT), a deep carious lesion was noted involving the coronal portion of 36. An ill-defined area of hypodensity is seen in apical region of 36. Well defined hyperdense periosteal sclerotic bone formation with central circular area of hypodensity was observed at the inferior border of the mandible and on lingual aspect with a tunnel-like linear well-defined hypodense defect in the cortical bone called as cloaca starting from the apical region of the mesial root of left mandibular first molar tooth till inferior border of the new formed bone.

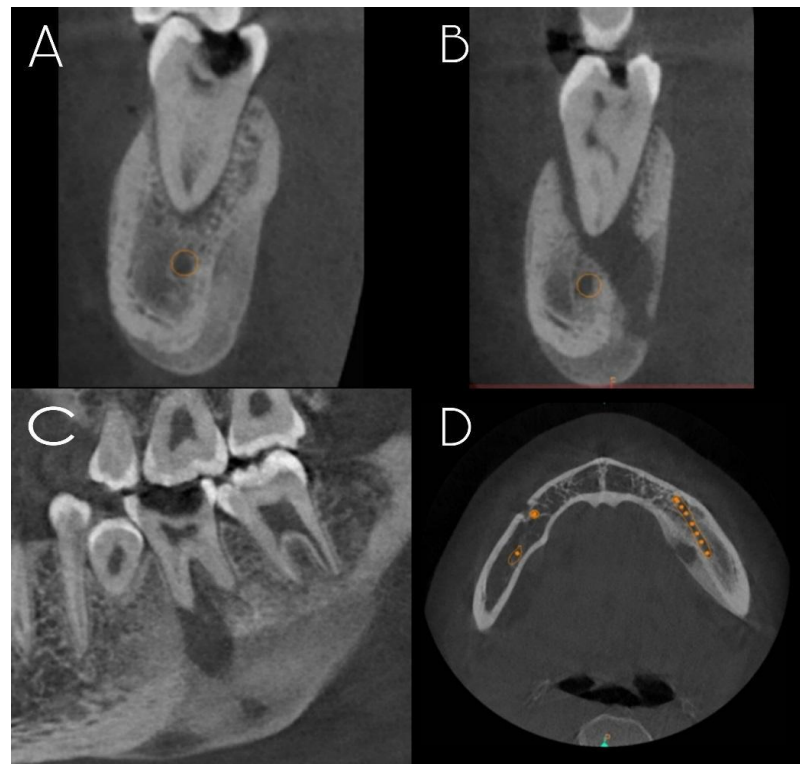


Figure 2(A)Saggital section (distal root of 36) showing periosteal bone deposition (B)Saggital section (mesial root of 36) showing periosteal bone deposition along with well -defined linear radiolucency

extending from apical region of the root till inferior border of mandible. (lingual aspect) (C) Cropped panoramic view showing periosteal bone formation with cloaca (D) Axial view showing periosteal new bone deposition on lingual surface of posterior mandible on left side with well-defined circular radiolucency showing cloaca tract.

Based on clinical and radiographic findings, provisional diagnosis of Garre's osteomyelitis was made. According to the classification given by Kawai *et al.*¹³ which is based on whether the original contour of mandible is preserved or not our case was diagnosed as type II subtype I.

Since the bone density was compromised, endodontic treatment option was nullified and extraction followed by saucerization and curettage of the bone was done. The tissue sample from curretated bone and sinus tract was sent to oral pathology department for evaluation. The histopathological features were suggestive of granulation tissue. Patient was given antibiotics for a week and recalled for suture removal and follow up. An OPG was taken after 2 weeks which showed healing periapical lesion.

DISCUSSION

Carl Garre in 1893 described Garre's osteomyelitis in long bones however it was Berger who first described this condition affecting the jaw bones^{8,1}.

Garre's osteomyelitis is characterized by localized periosteal thickening with unknown etiology.^{1,5,6,9} However multiple factors such as chronic mild irritation or infection, (dental caries, periodontal disease, or soft tissue disease) increased periosteal osteoblastic activity⁴, impaired imbalance between the virulent bacteria and oral flora are mentioned as causative factors in many cases.^{1,5,12} Garre's osteomyelitis is most commonly evident in young patients before the age of 25.^{4,5} Lateral aspects of the mandible is most common site for the occurrence of this lesion^{4,6,9}. Its occurrence in the upper jaw is rare and bilateral involvement is extremely rare⁶.

There is no need for a biopsy during the diagnosis, except the cause is unknown⁶. Conventional radiographic methods or CBVI images are sufficient for diagnosis⁷.

Radiographic appearance of Garre's osteomyelitis includes 'radiopaque laminations' nearly parallel to each other and the underlying cortical surface which gives an appearance of onion skin. Lamination varies from one to twelve in number. It has radiolucent isolation between the new bone and the original cortex. Within areas of new bone, small sequestration or osteolytic radiolucency is also seen.

Two radiographic classifications for Garre's osteomyelitis are given by Kawai *et al.* First one is based on whether the original contour of mandible is preserved (type I) or not

(type II). Both types are again divided into two subtypes. (table1) The second classification is based on gross radiographic features of Garre's osteomyelitis. (table2)

There are many cases documented in literature with typical onion skin appearance of the lesion. Unlike this feature our case shows type II subtype I of kawai et al classification. Till now, there are only four documented case reports showing similar radiographic features as described by kawai et al for type II subtype I. However, they have not followed the classification for the diagnosis of the condition.

Differential diagnosis for periosteal bone formation includes Ewing's sarcoma, Caffey disease, fibrous dysplasia, Paget's disease, osteosarcoma, and hard, nodular, or pedunculated masses seen in the mandible (peripheral osteomas, torus and exostoses, ossifying subperiosteal hematoma, etc.)^{2,5,6,7}

Caffey disease (infantile cortical hyperostosis) is a rare self-limiting condition of infancy that is characterized by cortical hyperostosis, particularly affecting the mandible and facial bones.⁸ This condition is bilateral and multiple bones are involved unlike Garre's osteomyelitis.⁵ Ewing's sarcoma and osteosarcoma are the two malignant conditions with similar periosteal reaction, although they are very rare in mandible and characterized by "sun ray" appearance.^{8,5} While the latter is characterized by Codman triangle, the former, in addition, shows osteolytic areas and neurological symptoms like facial neuralgia and lip paresthesia.^{5,8} Fibrous dysplasia is typically characterized by the "ground glass appearance" and the enlargement is seen in the bone matrix, whereas in Garré's osteomyelitis it is seen on the outer surface of the cortex.^{5,6,8}

Once the cause is removed the bone will remodel itself gradually and the original facial symmetry will be restored⁹.

CONCLUSION

A case of Garre's osteomyelitis with different radiographic appearance is presented in this article to show that, Garre's osteomyelitis has various other radiographic appearance other than onion skin.

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Table 1. Classification based on the radiographic appearance¹³.

	TYPE I (Original contour of mandible preserved)	TYPE II (original contour of mandible is lost)
Subtype 1	Single lamella seen as a radiopaque line of periosteal new bone overlying the original cortex separated by a radiolucent line.	Newly formed bony enlargement with resorption of original cortex and osteolytic areas usually visible.
Subtype 2	Visible hemi-elliptical newly formed bony enlargement, well outlined with a thin cortical surface located on the outer aspect of original cortex producing an onion skin appearance.	Deformation with a homogeneously dense osteosclerotic bone that made original cortex discernible. This subtype occasionally showed duplication of newly formed periosteal bone on the outer aspect of the deformed mandible

Table 2. Classification of Gross Periostitis Ossificans¹⁴.

Type A	Showing an onion skin appearance, resulting from a nonvital tooth or following extraction of a tooth.
Type B	Consolidation form shows fine bony spicules perpendicular to bone surface.
Type C	Consolidation form shows coarse trabeculation with wide marrow spaces.
Type D	Shows more osteosclerotic and osteolytic changes in the affected medullary bone and disappearance of original cortex or loss of the original bone contour.