

Inflammatory bone destruction due to abscess of the periodontium in Hadrianapolis community skeletons

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Abstract

The tower of Macedonia is located in the northwest of Turkey. The skeletal remains found during the archeological investigations at Hadrianapolis region by Edirne Museum during 2002-2003 were related to Eastern Roman-Byzantium period. From a total of 139 human skeletal remains were examined and two of them showed signs of abscess. A periodontal abscess is a localized purulent infection of periodontal tissues and can be a common clinical finding among patients with moderate to advanced periodontitis. They are associated with tooth loss and progressive bone loss in cases.

Keywords: Bone Destruction; Abscess; Periodontitis

Introduction

Infectious diseases, has been the case in all societies since *homo sapiens*. Odontogenic infections have various possible sources, including pulp necrosis, periodontal infections, pericoronitis, trauma or surgery (1). Odontogenic or dental abscesses have been defined according to their infection source, as endodontal or periapical abscess, periodontal abscess and pericoronal abscess (2).

A periodontal abscess is a localized purulent infection of periodontal tissues and can be a common clinical feature in patients with moderate or advanced periodontitis (3-7). It is a localized accumulation of pus within the gingival wall of a periodontal pocket resulting in the destruction of the collagen fiber attachment and the loss of nearby alveolar bone. Inflammation involving the supporting structures may be accompanied by increased tooth mobility, elevation of the tooth in its socket, and tenderness to percussion or on mastication.

Pathogenesis and histopathology

The entry of bacteria into the soft tissue pocket wall could be the first event to initiate the periodontal abscess. Inflammatory cells are then attracted by chemotactic factors released by the bacteria, and the concomitant inflammatory reaction leads to destruction of the connective tissues (8), the encapsulation of the bacterial infection and the production of pus (4). Histologically, intact neutrophils are found surrounding a central area of soft tissue debris and destroyed leukocytes. At a later stage, a pyogenic membrane, composed of macrophages and neutrophils, is organised. The rate of destruction in the abscess will depend on the growth of bacteria inside the foci and its virulence as well as on the local pH, since an acidic environment will favour the activity of lysosomal enzymes (8).

Materials and methods

Historical Background

The tower of Macedonia is located in the northwest of Turkey. The skeletal remains found during the archeological investigations at Hadrianopolis region by Edirne Museum during 2002-2003 were related to Eastern Roman-Byzantium period. From a total of 139 human skeletal remains were examined and two of them showed signs of abscess.

In the previous paleoanthropologic studies the age identifications of the skeletons of Hadrianopolis inhabitants was performed by analyzing body bone epiphysial junction for young adults, costal, symphyseal, sutural and dental aging for adults (9,10). All morphological differences especially pelvic and cranial were taken into consideration regarding sex determination.

Case I

First case (Fig 1-5) a 48,50 year-old male presented with a failed maxillary first molar left teeth because the periodontal abscess. In addition, probably for the same reason lost to adjacent teeth. Examination of other bones of skull, such as frontal bone, observed for signs of infection.

Case II

Second case (Fig 6-8) a 33,93 year-old male have advanced bone destruction in a maxillary right molar region. In the image of the skull base, bone resorption is clearly visible.

Discussion

Periodontal disease is frequently analysed as part of bioarchaeological and paleopathological investigations of the skeletal remains of past populations (11). Standard anthropological techniques were used and bone infections, dental caries, antemortem tooth loss, periapical abscesses, periodontal disease and enamel hypoplasia were macroscopically assessed. Dental ailments were minimal and age-related diseases, such as antemortem tooth loss and periapical abscesses, were noted only in older individuals. Total of 139 human skeletal remains were examined and periodontal abscesses were noted on two people.

Focal infection have historically been postulated to arise from the tonsils, adenoids, sinuses and oral cavity. Oral foci have traditionally been ascribed to pyorrhea alveolaris (periodontitis) being the principal metastatic microbial culprits (12).

Periodontal abscesses associated with tooth loss and progressive bone loss. They have been occurred due to metastatic bacteremias and focal infection. In present cases, other bones of the skull excluding maxillary bones, such as frontal bone, have infectious findings. Periodontal abscess' infection and related bacteremia may be the cause of death in these cases.

Conclusion

A periodontal abscess is a localized purulent infection of periodontal tissues and can be a common clinical finding among patients with moderate to advanced periodontitis. They are associated with tooth loss and progressive bone loss in cases.

References

1. Gill Y, Scully C. The microbiology and management of acute dentoalveolar abscess: views of British oral and maxillofacial surgeons. *British Journal of Oral and Maxillofacial Surgery*. 1988; 26, 452–457.
2. Van Winkelhoff AJ, Carlee A, de Graaff J. *Bacteroides endodontalis* and other black-pigmented *Bacteroides* species in odontogenic abscesses. *Infection and Immunity*. 1985; 49: 494–497.
3. Carranza FA Jr. Gingival enlargement. In Carranza FA Jr., Newman MG, eds. *Glickman's Clinical Periodontology*, 8th ed. Philadelphia: WB Saunders Co.; 1996:234-235.
4. Carranza FA Jr. The periodontal pocket. In Carranza FA Jr., Newman MG, eds. *Glickman's Clinical Periodontology*, 8th ed. Philadelphia: WB Saunders Co.; 1996:292-295.
5. Carranza FA Jr. Clinical diagnosis. In Carranza FA Jr., Newman MG, eds. *Glickman's Clinical Periodontology*, 8th ed. Philadelphia: WB Saunders Co.; 1996:358-360.
6. Ahl DR, Hilgeman JL, Snyder JD. Periodontal emergencies. *Dent Clinics N Am* 1986;30:459-472.
7. McLeod DE, Lainson PA, Spivey JD. Tooth loss due to periodontal abscess: A retrospective study. *J Periodontol* 1997;68:963-966.
8. DeWitt GV, Cobb CM, Killoy WJ. The acute periodontal abscess: microbial penetration of the tissue wall. *International Journal of Periodontics and Restorative Dentistry*. 1985; 1: 39–51.
9. Buikstra JE, Ubelaker DH. Standards for data collection from human skeletal remains. *Arkansas Archaeological Survey Research*, 1994. Series no 44, p.206.
10. Miles AEW. Dentition and the estimation of age. *Journal of Dental Research*, 1963;42: 255-263.
11. Dewitte SN, Bekvalac J. Oral health and frailty in the Medieval English Cemetery of St.Mary Graces. *J Am Phys Anthropol*. 2010; 142:341-354.
12. Pallasch TJ, Wahl MJ. The focal infection theory: appraisal and reappraisal. *Calif Dent Assoc J* 2000: 28: 194–200.



Figure 1



Figure 2



Figure 3



Figure 4

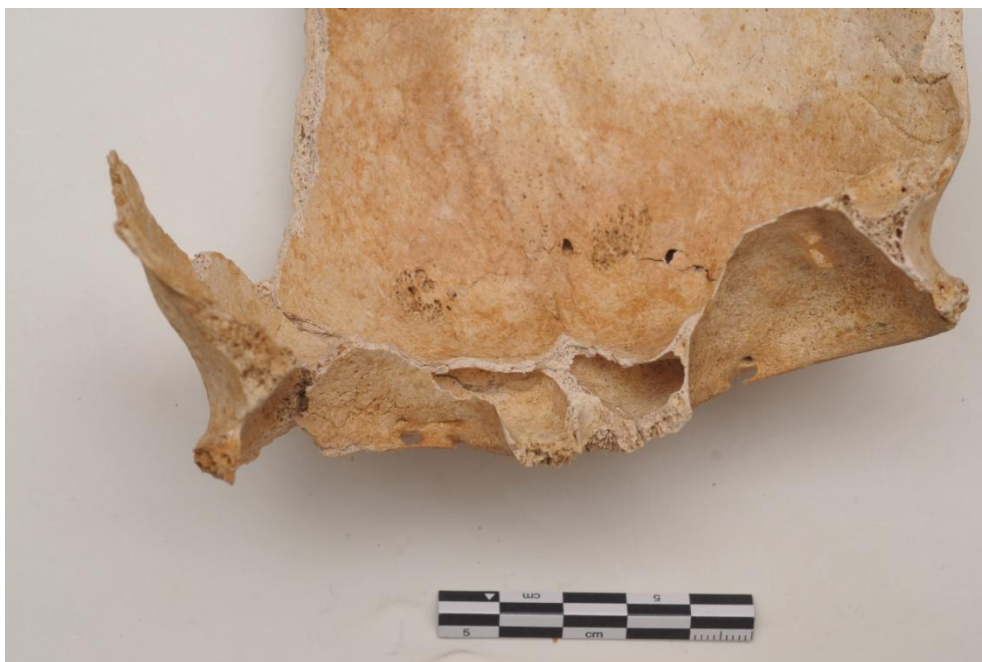


Figure 5



Figure 6



Figure 7



Figure 8