

Study On Microbiological Organisms Responsible For Chronic Osteomyelitis Of The Jaw in Bangladesh

AKMS Moral¹, T Begum², AFMS Rahman³
MM Hasan⁴, MM Islam⁵

Abstract

The present cross sectional study consists of 50 patients and was conducted between July 2008 and June 2009 in the Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh. The number of male patients was higher than the female and the age of the patient was mostly found in third and fourth decade. The majority of the lesions were found in the body of the mandible and had resulted from odontogenic infections, post-extraction complication, inadequate removal of necrotic bone, early termination of antibiotic therapy, inappropriate selection of antibiotic, diagnostic failure, trauma and inadequate treatment for fracture. In this study, the most common causes of chronic osteomyelitis of the jaws were directly related to odontogenic infections like infected unhealed socket (60%). The most common pathogenic micro-organism causing chronic osteomyelitis of the jaws was found to be Staphylococcus aureus (82%).

Introduction

Chronic Osteomyelitis is a persistent disease of bone that is characterized by inflammatory processes, including necrosis of mineralized and marrow tissue, suppuration, resumption, sclerosis, and hyperplasia^{1,2}. In contemporary world, the incidence of Osteomyelitis of the jaw has declined because of the wide spread availability of the newer antimicrobial agent, better awareness and better dental health care while we come across a large number of osteomyelitis cases and its causes can be attributed due to inappropriate and indiscriminate use of antibiotic, less awareness about dental and oral hygiene, malnutrition, developing of certain strain of microorganism which are resistant to certain antibiotic. The following factors that also predispose to osteomyelitis of the jaw are virulence of the microorganism, compromised vascular integrity and perfusion in the host bone at the local, regional or systemic level and condition affecting host resistance or defence³. The disease may be acute, subacute or chronic each of which produce a completely different clinical

picture. Chronic Osteomyelitis of the jaw has a variety of clinical appearances and related with various etiologic factors. Therefore the diagnosis is more difficult^{4,5}. Culture and sensitivity, bone and soft tissue biopsy, conventional radiography, specialized radiography, radioisotope bone scanning, laser dopler flowmetry, computerized tomography and magnetic resonance imaging are used in diagnosing chronic Osteomyelitis⁶⁻⁹. Radioisotope, bone scanning, ^{99m}Tc, Methylene diphosphonate reveal strong uptake in the maxilla and mandible¹⁰. Tissue specimen need to be cultured and once soft tissue and bone specimen have been obtained, they must be sent to the microbiological laboratory to identify the causative microorganism¹¹. The clinical presentation of chronic Osteomyelitis include pain, tenderness, swelling, intraoral and extraoral purulent pus discharge present of sequestra and radiographic changes. Typical radiographic change usually do not appear

For several weeks. Therapy for osteomyelitis requires a multidisciplinary approach. A precise microbiological diagnosis, exploration and adequate surgical debridement of necrotic tissue are essential in case of chronic osteomyelitis¹².

The purpose of this study was to evaluate chronic osteomyelitis of the jaw giving more emphasis on identification of the specific microorganism for its definitive antibiotic treatment protocol, which may help in achieving better treatment results and minimize post operative complication.

Results and Observations:

This prospective study was conducted in Dhaka Dental College and Hospital for a period of two years started from July, 2008 to June, 2009. Initially 55 patients were

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1. Dr. A. K. M. Sobhan Moral, MS, DDS, MCPS, BDS, Assistant Professor, Dept of Oral and Maxillofacial Surgery, Dhaka Dental College, moralsobhan@gmail.com
 2. Dr Taslima Begum, MBBS, M.Phil (Microbiology), Assistant Professor, Dept of Microbiology, Holy Family Red Crescent Medical College,
 3. Dr AFM Shahidur Rahman, BDS, MS, FCPS, Assistant Professor, Dept of Oral and Maxillofacial Surgery, Dhaka Dental College
 4. Dr Md Mokerrom Hasan, BDS, MS, FCPS, Lecturer, Dept of Oral and Maxillofacial Surgery, Dhaka Dental College
 5. Dr. Md. Mahfuzul Islam, BDS, Maxillofacial surgery, Dhaka Dental College and Hospital,

Address of Correspondence : Dr Md Mokerrom Hasan, mokerrom@yahoo.com

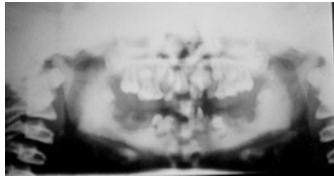


Fig. 2: OPG shows the radiopaque sequestra sinus in the mandible



Fig. 3: Post operative photograph

Discussion

The primary cause of chronic osteomyelitis is usually microbiologic and result from an odontogenic infection, post extraction complication, inadequate removal of necrotic bone, early termination of antibiotic therapy, inappropriate selection of antibiotic, diagnostic failure, trauma, inadequate treatment for fracture and irradiation of the mandible.

In this study a total 50 patient were studied and among them the most common causes of chronic osteomyelitis of the jaws were directly related to odontogenic infections like infected unhealed socket (60%), pulpitis (14%), pericoronal infections (10%), periodontal abscess (6%), infected cysts (6%) and gingivitis (2 %). This finding differs with that of SU-Gwan kim et al ¹³. Who found 38.5% odontogenic causes of chronic osteomyelitis. This difference could be attributed to lack of awareness, poverty, illiteracy and possibly maltreatment leading to late presentation of the patient.

Regarding age and sex distribution of the study patients the mean age of the male patients was 37+16.2 years and the females 23.9 +17 years. It was evident that among the male patients highest percentage (50.0%) was in the age group of 35-49 years where as in females patients the highest percentage was in the age group of 0-20 years. Analysis revealed that the mean age of the male patients was higher then the female patients ($P < 0.001$) indicating that the proportion of young female patients were higher compared to male patients.

In the study of SU-Gwan-Kim et al ¹³, it was shown that the percentage of chronic osteomyelitis of male patient was 63.3% and female was 36.3% and the highest age group was 50-59 years. Our study however revealed that chronic osteomyelitis patients in Bangladesh are of much younger age group.

Among the study patients chronic suppurative osteomyelitis comprised 94% followed by tuberculous osteomyelitis (2%), actinomycosis osteomyelitis (2%) and chronic sclerosing osteomyelitis (2%). The reason for Chronic suppurative osteomyelitis being the most

common in this study could explained by the fact that the lesion communicated with the exterior skin surface via a sinus.

Culture and sensitivity test revealed 82% staphylococcus aureus, followed by klebsiella (4%), mycobacterium tuberculosis (4%), actinomycosis (4%) and streptococcus viridans (2%). It was observed that (4%) patients had shown no bacterial growth on culture & sensitivity test. This above finding co-related with the observation of SU-Gwan kim at al.¹³

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