

Chronic Suppurative Osteomyelitis of the Mandible

Yogesh Kumar, Associate Professor, K M Medical College, Mathura, U.P.

Corresponding Author: Yogesh Kumar, Associate professor, K M Medical College, Mathura, U.P.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: Osteomyelitis is an inflammation of the medullary portion of the bone which extends to the periosteum of the affected area. The infection becomes established in the calcified portion of the bone when pus in the medullary cavity or beneath the periosteum leads to the obstruction of blood supply.

Methods: This prospective study was conducted in the Outpatient Department of Dental Surgery. All patients with discharging sinus, swelling and pain in the jaw and clinically/radio-graphically suspected as a chronic osteomyelitis were evaluate in the hospital irrespective of age and sex. 50 patients were enrolled for the study.

Results: 64.00 % patients were male and 36.00% patients were female. Long-standing localized bone pain was observed in 76.00%, edema (50.00%), purulent discharge (40.00%) osteolytic lesions (72.00%), bone condensation (84.00%), and bone sequestra (62.00%) are the most common clinical and radiographic signs.

Conclusion: Osteomyelitis is a multifactorial disease and its presentation varies. Infection of the maxilla and mandible can cause serious complications for the patient such as infection of cranial cavity and brain.

Keywords: Osteomyelitis, edema, bones, vascular.

Introduction

Osteomyelitis is an inflammation of the medullary portion of the bone which extends to the periosteum of the affected area. The infection becomes established in the calcified portion of the bone when pus in the medullary

cavity or beneath the periosteum leads to the obstruction of blood supply. The necrosis ensues once ischemia sets in. Alteration of host defence mechanisms is present in most of the patients with the osteomyelitis of the jaw. Various conditions affecting the vascularity of bone include radiation, osteoporosis, osteopetrosis, Paget's disease of bone, bone malignancy, and these seem to play an important part in etiopathogenesis of this condition¹

Osteomyelitis of the jaw is a common and dreaded disease that needs prolonged therapy which occasionally results in disfigurement and dysfunction due to loss of a major portion of the jaw bone. In the contemporary world, the incidence of osteomyelitis of the jaw has declined because of the widespread availability of newer antimicrobial agents and better dental health care. But still we come across a large number of osteomyelitis cases and this can be attributed to inappropriate and indiscriminate use of antibiotics, less awareness about dental and oral hygiene, malnutrition and developing of certain strains of microorganisms which are resistant to certain antibiotics. Some other factors that also predispose an individual to osteomyelitis of jaw are virulence of the microorganism, compromised vascular intriguing and perfusion in the host bone at the local, regional or systemic level and conditions affecting host resistance or defense²

Osteomyelitis of the maxilla is much less frequent than that of the mandible because blood supply to the maxilla is far more extensive. Besides infection, compromise of the blood supply is a critical factor in the establishment of

osteomyelitis so osteomyelitis occurs more commonly in the mandible than in the maxilla because of the dense, poorly vascularised cortical plates and the single blood supply from the inferior alveolar neurovascular bundle. ³

Here we present a research osteomyelitis of maxilla and mandible with sequestration and its management.

Material & Methods

This prospective study was conducted in the Outpatient Department of Dental Surgery. All patients with discharging sinus, swelling and pain in the jaw and clinically/radio-graphically suspected as a chronic osteomyelitis were evaluate in the hospital irrespective of age and sex. 50 patients were enrolled for the study. Those patients who gave consent to be included in the study were enrolled in the study. Patients who were non-cooperative and psychotic were also not included.

TLC, DLC, Hb%, BT, CT, Fasting and PP Blood sugar, urine, etc. -Radiological investigation: Orthopantomographs (OPG), Lateral Oblique View of the Mandible, Occipito-mental view/ PNS, X-ray chest PA view.

Data was collected and analysed regarding the maintenance of oral hygiene, cause, age and sex distribution, extra oral findings, clinical presentation, treatment and outcome of the treatment.

The data for each patient was organized and compiled into a raw data form. The data were entered into the software and transferred to SPSS software for analysis.

Results

Table no. 1. Age wise distribution

Age group	No. of patients	Percentage
Less than 20 Yrs	10	20.00
21-50 Yrs	27	54.00
More than 50	13	26.00

Yrs		
Total	50	50.00

Most common age group was 21-50 Yrs age

Table no. 2. Sex wise distribution

Sex	No. of patients	Percentage
Male	32	64.00
Female	18	36.00
Total	50	100.00

64.00 % patients were male and 36.00% patients were female.

Table no. 3. Clinical and radiological feature of patients

Clinical feature	No. of patients	Percentage
Pain	38	76.00
Edema	25	50.00
Prulent discharge	20	40.00
Osteolytic lesion	36	72.00
Bone condensation	42	84.00
Bone sequestra	31	62.00

Long-standing localized bone pain was observed in 76.00%, edema (50.00%), purulent discharge (40.00%) osteolytic lesions (72.00%), bone condensation (84.00%), and bone sequestra (62.00%) are the most common clinical and radiographic signs.

Discussion

Chronic suppurative osteomyelitis is a rare but well-described potential complication of chronic odontogenic infections that dental surgeons may more frequently encounter ⁴⁻⁵. Tissue necrosis entails as proteolytic enzymes are liberated with destruction of bacteria along with vascular thrombosis and ischemia. When pus accumulates, intramedullary pressure increases, resulting in vascular collapse, venous stasis, and further ischemia. Pus accumulating beneath the periosteum elevates it from the cortex and thereby further reduces the vascular supply.

As this continues to accumulate, the periosteum is breached and mucosal and cutaneous abscesses and fistulae develop. In its acute stage, suppurative osteomyelitis of the mandible is usually characterized by deep-seated intense pain, high intermittent fever, paresthesia of the mental nerve and a clearly identifiable cause. Immediate aggressive antibiotic therapy may prevent progression to the periosteum. In established suppurative osteomyelitis, symptoms include deep pain, fever, and constitutional symptoms. Within 10 to 14 days after onset, teeth in the involved area begin to loosen and become sensitive to percussion. Pus exudes around the gingival sulcus and then destroys mucosal and cutaneous barriers leading to fistulae⁶⁻⁸.

In our study long-standing localized bone pain was observed in 76.00%, edema (50.00%), purulent discharge (40.00%) osteolytic lesions (72.00%), bone condensation (84.00%), and bone sequestra (62.00%) are the most common clinical and radiographic signs.

The study conducted by Dhaval Trivedi et al¹⁰ was observed that the clinical features may include local pain, fever, swelling, purulent discharge, intra-oral and skin fistula, unhealed soft tissue in the oral cavity, parasthesia in the involved area, pathological fracture and trismus.

Conclusion

Osteomyelitis is a multifactorial disease and its presentation varies. Infection of the maxilla and mandible can cause serious complications for the patient such as infection of cranial cavity and brain.

References

1. Topazian RG. Chapter 10. Osteomyelitis of the Jaws. In: Oral and Maxillofacial Infections. Philadelphia: WB Saunders; 2002.
2. Hudson JW. Osteomyelitis of the jaws: A 50-year perspective. *Journal of Oral & Maxillofacial Surgery*. 1993; 51: 1294-1301.
3. Fullmer JM, Scarfe WC, Kushner GM, Alpert B, Farman AG. Cone beam computed tomographic findings in refractory chronic suppurative osteomyelitis of the mandible. *British Journal of Oral & Maxillofacial Surgery*. 2007; 45: 364-371.
4. Seth R, Futran ND, Alam DS, Knott PD. Outcomes of vascularized bone graft reconstruction of the mandible in bisphosphonate-related osteonecrosis of the jaws. *Laryngoscope*. 2010; 120: 2165-2171.
5. Greene JC, Vermillion JR. The Simplified Oral Hygiene Index. *Journal of the American Dental Association*. 1964; 68: 7-13.
6. Bernier S, Clermont S, Maranda G, Turcotte JY. Osteomyelitis of the jaws. *Journal of the Canadian Dental Association*. 1995; 61: 441-448.
7. Koorbusch GF, Fotos P, Goll KT. Retrospective assessment of osteomyelitis etiology, demographics, risk factors, management in 35 cases. *Oral Surgery, Oral Medicine, Oral Pathology*. 1992; 74: 149-154.
8. Hudson JW. Osteomyelitis of the jaws: a 50-year perspective. *Journal of Oral & Maxillofacial Surgery*. 1993; 51: 1294-1301.
9. Craig CH, Jonathan BA, Brian R. Chronic Osteomyelitis Following an Uncomplicated Dental Extraction. *Journal of Canadian Dental Association*. 2011; 77: 98.
10. Dhaval Trivedi, Rakesh Shah, Megha Vyas, Gaurang Sachdev. Combination Of Pharmacological And Surgical Management For Pathological Fracture Of Mandible Associated With Chronic Suppurative Osteomyelitis - A Case Report. *IEJDTR*. 2015; 4(3):308-311.