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Case Series of Rare Cases of Osteomyelitis

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ABSTRACT

Background: Inflammation of the bone and bone marrow, primarily from infection in the medullary cavity, is the hallmark of osteomyelitis. It spreads to the periosteum and quickly consumes the haversian system. Compared to today's time and era, osteomyelitis of the jaws was in fact a common discovery prior to the widespread use of antibiotics. Odontogenic infections can be caused by a number of organisms that cause osteomyelitis of the jaws, including Peptostreptococcus, Fusobacterium, Prevotella, Staphylococcus aureus, and Staphylococcus epidermidis.

Case summary: A 3 years old female child presented with complaints of bilateral mandibular swelling and Dental caries since 2 months. On examination the patient had bilateral swelling which was firm in consistency, non-mobile adhered to underlying structure, non-tender, 4*5cm in size. The child was treated with 6 weeks of iv antibiotics for resolution of the symptoms. The 2nd case is a 10 years old male child came to OPD with complain of recurrent localized swelling in the mandibular region and Pain and difficulty in opening his mouth for the past 4 months. Intermittent fever persisting for 1 month. The 3rd case is of a 2 years old female child presented with low grade fever, subside intermittently with oral medications, associated with pus discharge from bilateral ear. CT scan of all 3 patients revealed that osteomyelitis on underlying mandible and maxilla.

Conclusion: Since maxillary osteomyelitis is one of the rarest types of osteomyelitis that occurs nowadays, diagnosing it might be challenging. There is a dearth of information on the epidemiology of maxillary osteomyelitis in India, which emphasizes the necessity of thorough investigation.

Keywords: *Osteomyelitis, Children, Prognosis, Maxillary region.*

1. INTRODUCTION

The hallmark of osteomyelitis is bone and bone marrow inflammation, which is mostly brought on by an infection in the medullary cavity. It quickly spreads to the periosteum and absorbs the haversian system. In contrast to the modern period, osteomyelitis of the jaws was a common occurrence prior to the widespread use of antibiotics. Numerous organisms that cause osteomyelitis of the jaws, including Prevotella, Peptostreptococcus, Fusobacterium, Staphylococcus aureus, and Staphylococcus epidermidis, have been found to be able to produce odontogenic infections. Poor patient outcomes and death were the results. With the introduction of antibiotics, improved dental hygiene, and contemporary treatment approaches, the incidence and prognosis have dramatically improved [1].

However, a number of documented cases in recent years have demonstrated a correlation between individuals with weakened immune systems—specifically, those suffering from untreated diabetes mellitus, continuous cancer therapy, and inadequate nutrition—and osteomyelitis of the jaws [2]. It is uncommon for osteomyelitis to impact the maxillofacial region; it typically affects the jaw. This contrast may be caused by the cancellous bone and the maxilla's abundant blood supply through collaterals, which reduces the risk of infection [3,4].

Osteomyelitis treatment necessitates a multimodal strategy that includes surgically excising dead bone tissue and completely eliminating all common pathogenic organisms using a combination of surgical, antibiotic, and palliative care techniques. Infections in the brain and cranial bones are dangerous aftereffects of maxillary osteomyelitis. Prompt diagnosis and proactive multidisciplinary care are essential for the best possible patient outcomes in order to prevent serious consequences [5].

Case History:

A 3-year-old female child presented with complaints of Bilateral mandibular swelling and Dental caries since 2 months. Child was apparently alright 2 months back when she started developing bilateral swelling which was progressive increasing in size, the child was admitted 1 month ago for the same and was prescribed oral antibiotics and advised dental extraction, patients relative didn't follow the advice, and came back with increased swelling. On general examination the patient had bilateral swelling which was firm in consistency, non-mobile adhered to underlying structure, non-tender ,4*5cm in size. On the dental examination the child had bilateral dental caries, and had to undergo dental extraction of 2nd molar bilaterally. On blood investigation, all complete blood count parameters was normal in range, IgG level was 2130 mg/dl, IgA level was 470 mg/dl, and IgM level was normal in range. On culture report no microorganism was found. CT scan revealed multiple lytic lesion in mandible and maxilla with cortical breaks perinatal reaction and associated abnormal soft tissues suggestive of osteomyelitis on underlying mandible and maxilla. On USG neck examination, found multiple enlarged lymph nodes with partial loss of fatty hilum with maintained vascularity with average size of 25*15mm are noted. The child was treated with 6 weeks of iv antibiotics for resolution of the symptoms.

Figure 1. CT scan findings among patient

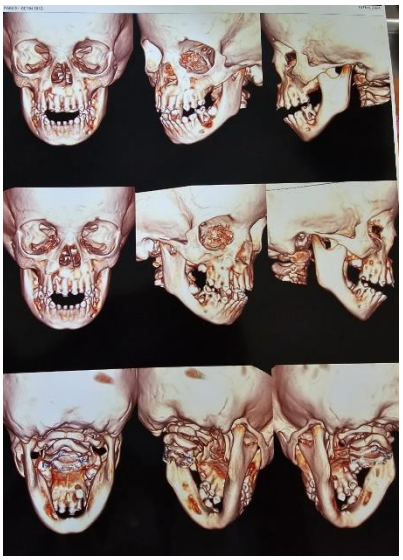

Figure 2. Bilateral swelling in Maxilla & Mandibular region of patient

A 2nd case of 10-year-old boy presented with the complain of Recurrent localized swelling in the mandibular region and Pain and difficulty in opening his mouth for the past 4 months as well as Intermittent fever persisting for 1 month. Four months ago, the patient was apparently asymptomatic until the onset of localized swelling in the mandibular region, which responded positively to medication. Subsequently, one month later, the patient's mother observed the swelling, for which he visited a pediatrician and was diagnosed as Mumps, for which symptomatic treatment was given. Two months later, the mother observed a gradually increasing swelling on the right mandibular region. This swelling did not elicit pain and did not diminish with medication. Along with the swelling, patient experienced recurring high-grade fever of 103°F, accompanied by chills and rigors without diurnal variation, which responded intermittently to OPD based treatment but recurred over the last month.

Moreover, he faced challenges in opening his mouth due to swelling, leading to reduced oral intake for the past two weeks, prompting his admission. On local examination, Firm Swelling Noted in Right Mandibular Region of size 6.5cm x 9cm

Slight rise in temperature, immobile No Fluctuation, Transillumination absent and No active Pus/Discharge/Bleed noted. On CT scan examination, cortical destruction with osteolysis is noted involving the ramus of right mandible suggestive of osteomyelitis. Child was treated with antibiotic therapy and successfully discharged after relieved symptoms.

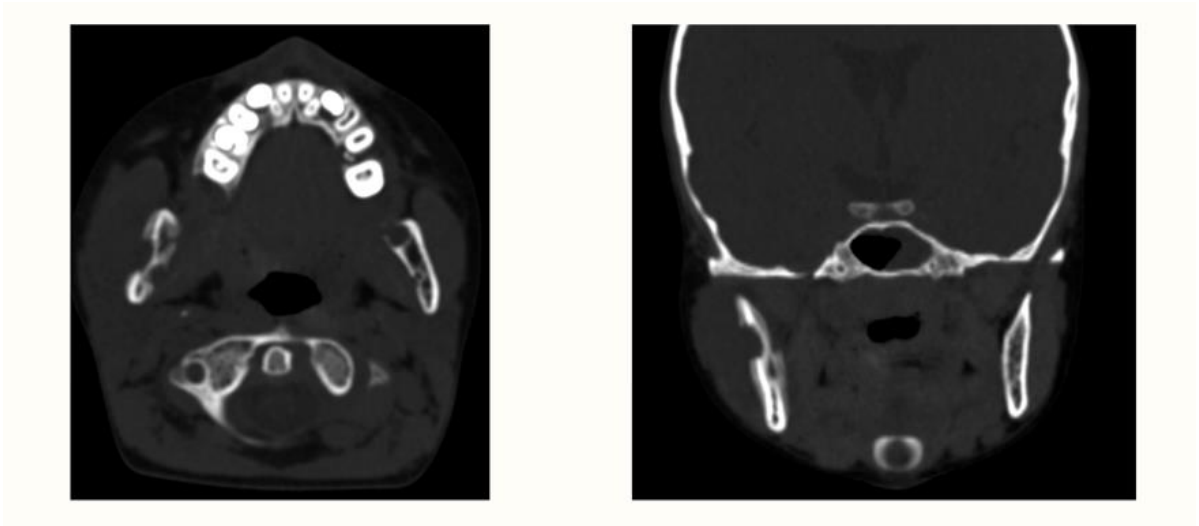

Figure 3. CT scan of 10 year old male child

Figure 4. Local examination findings in 10-year-old patient

A 3rd case of two year old female patient, came to casualty with complained of bilateral cheek swelling from 8 days, bilateral ear discharge from 3 days, increased oral intake with burning micturition. Patient had past history of nasovestibular abscess 2 months age and treated by incision and drainage. Patient was known case of Kawasaki disease. All blood investigations was normal. No abnormality found in USG. On CT scan examination, no neuroparyenchymal abnormality, upper sections of nasopharynx suggestive of swelling of both tonsils. On Gene expert testing, HAX 1 was found positive which suggestive of autosomal recessive genetic disorder- severe congenital neutropenia 3. Patient was treated with antibiotics and symptoms were subsided.

2. DISCUSSION:

In the modern world of medical innovation, illnesses like osteomyelitis are quite uncommon, and they are even rarer when they impact the maxillofacial region of the bone structure. One of the uncommon conditions that could show up in an outpatient department is osteomyelitis of the maxilla, within this range of exceptions. The disease is hard to detect since it can appear as immunocompromised disorders including diabetes mellitus, cancer, and malnutrition, as well as circumstances like trauma and hematogenous infection [6]. Generally speaking, osteomyelitis of the jaw can be caused by three different factors: odontogenic infections, rhinogenic origin, and traumatic, typically following a car accident or hospitalization [7].

The pH of the blood and capillary permeability both alter during pathogen invasion. Low oxygen levels at the tissue level are the result of tissue breakdown, cytokine production, localized edema, and inadequate tissue perfusion. localized thrombosis in tiny arteries, bone deterioration, and elevated pressure. The Haversian and Volkmann canals allow the cavity to expand up to the cortex when the medullary cavity becomes infected due to a pressure surge. Additionally, periosteal stripping occurs as a result of the infection spreading to the subperiosteal region. In the end, necrosis and bone resorption are caused by periosteal blood flow impairment [8,9].

Because it often stays untreated, osteomyelitis of the jaw requires a greater level of suspicion and an early diagnosis. Osteomyelitis can be diagnosed using a variety of diagnostic techniques, including radiographic and haematological investigations, histological testing, and thorough clinical examinations. High neutrophil and leukocyte counts indicate the abrupt development of infections. To rule out any cancer differentials that could be mistaken for osteomyelitis, a biopsy can be performed [10,11].

Squamous cell cancer, osteosarcoma, langerhans' cell histiocytosis, and fibrous dysplasia are further disorders that resemble osteomyelitis of the jaw. It is difficult to diagnose osteomyelitis of the jaw in these cases because they exhibit periosteal response and bone degradation [12].

To prevent the underlying condition from getting worse, the treatment plan should be aggressive and started very once. In addition to providing antibiotic coverage and surgically removing dead and necrotic bone tissue, the treatment attempts to fortify the immune system. Among the antibiotics covered are linezolid, metronidazole, and amikacin [13]. The range of management includes both aggressive invasive surgical techniques and straightforward non-invasive therapies. Muscle relaxants, antibiotics, bisphosphonates, and hyperbaric oxygen therapy are all part of the non-invasive strategy. Surgery such as decortications, bone grafting, and partial or segmental excision are contemplated when non-surgical treatments appear to be inadequate in maintaining bone structure [14].

3. CONCLUSION:

Mandibular osteomyelitis may manifest symptoms that resemble those of other conditions like juvenile recurrent parotitis, parotid abscess. Relying solely on clinical examination is not enough, warranting the utilization of imaging techniques such

as ultrasound and CT scans for knowing the extent of disease and planning treatment. When considering differential diagnosis, it is essential to include other potential sources of facial swelling and pain, such as dental infections, salivary gland issues, and trauma. The diagnosis of maxillary osteomyelitis is challenging because it is one of the rarest types of osteomyelitis that occurs nowadays. The necessity for extensive investigation is highlighted by the paucity of literature on the epidemiology of maxillary osteomyelitis in India. Because osteomyelitis of the jaw in immunocompromised people is difficult for medical practitioners to diagnose and treat, it has to be treated with greater caution. Because of its unusual clinical manifestations and similarities to other oral diseases, it can result in serious infections that impact the brain and cranium. Because of this, patients who complain of persistent pain following tooth extractions or trauma should be treated with consideration for osteomyelitis of the jaw. Early detection, timely treatment, and a variety of management techniques can greatly enhance patient outcomes when dealing with patients with maxillary osteomyelitis.

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