

Acute osteomyelitis of the maxilla in the newborn

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Abstract

Acute osteomyelitis of the maxilla in the newborn is a rare infective condition of the maxilla which subsequently spreads to include the eye, nasal and oral cavities with their attending signs and symptoms. Possible sequelae include death, ophthalmological, laryngological and dental complications. The organism responsible is usually *Staphylococcus aureus* and early diagnosis and treatment can result in rapid resolution of the condition.

Key words: Maxilla; Osteomyelitis; Newborn

Introduction

Infections of the oral-facial region, the nose, sinuses, eye and ear are not uncommon among children. Most of these infections are easily amenable to treatment with no serious consequences. Acute osteomyelitis of the maxilla in the newborn is however not a common clinical entity. Since its clinical manifestations involve primarily the eye, the nose and oral cavity, this condition is reported in journals of ophthalmology, otolaryngology and oral and maxillofacial surgery.

Case report

A three-week-old Chinese boy was referred by his general practitioner with a swelling of the right eye and associated purulent nasal discharge and a two day history of fever. After full term gestation, the baby was born by normal delivery and weighed 3340 gm. The condition of the baby after birth was good and there were no other postnatal problems.

The general clinical examination was unremarkable, except for a mild septic condition. The baby was irritable and had a temperature of 38.2°C. The medial canthus of the right eye was swollen, with a diffuse inflammation spreading to the lower eyelid. Eye movement was normal and the pupils were of equal size and reacted to light. There was no proptosis, chemosis or ophthalmoplegia. The baby was started on 150 mg of i.v. ampicillin and cloxacillin at six hourly intervals and 6 mg of gentamicin eight hourly. Nasal swab and blood were taken for culture and sensitivity tests. A lumbar puncture was performed to exclude the possibility of early meningitis.

The microbiological examination revealed colonies of *Staphylococcus aureus*, sensitive to cloxacillin, gentamicin and erythromycin but resistant to penicillin, ampicillin, neomycin, chloramphenicol and claforan. The cerebrospinal fluid (CSF) was found to be clear and of normal flow rate. The CSF profile was normal. The intravenous antibiotic was revised to cloxacillin (200 mg 6 hourly) with a topical application of gentamicin and fusithalamic cream to the affected eye. The baby was then referred to the department of otolaryngology and a tentative diagnosis of ethmoiditis was suggested.

The following day, the baby's condition worsened and he was noted to have a yellowish discharge from the mouth. A referral to the oral and maxillofacial department was made. Examination of the mouth revealed a purulent discharge at the alveolar crest of

the upper right quadrant. There was also a mid-palatal soft tissue swelling measuring 3 × 3 mm. The baby's general condition was that of mild to moderate infection. A diagnosis of maxillary osteomyelitis of the neonate was made. Under a general anaesthetic an alveolar crest abscess was drained. The mid-palatal swelling was found to be continuous with the alveolar crest abscess. Culture and sensitivity test again confirmed the presence of *Staphylococcus aureus* infection sensitive to cloxacillin. The baby was put on a ventilator for two days: 200 mg of intravenous cloxacillin at 6 hourly intervals was maintained. Comprehensive microbiological and radiological tests were carried out but failed to implicate immunodeficiency as the underlying cause of the maxillary osteomyelitis and the aetiology remained unknown.

The baby's clinical conditions improved remarkably over the following two weeks and he was subsequently discharged. At a review appointment six months later, there was no recurrence of the disease.

Discussion

Acute osteomyelitis of the maxilla in infants is an uncommon condition. Its involvement of the eye, nose and oral cavity may result in uncertainty in diagnosis. Those unfamiliar with the condition may diagnose it as sinusitis, rhinitis or conjunctivitis.

There is no universal agreement on the origin of this condition and hence various terms have been used to describe it. These are acute maxillitis of the infancy (Hitchin and Naylor, 1957), empyema of the antrum (Power, 1897) and osteomyelitis of the superior maxilla (Asherson, 1939). The latter term was probably used because the involvement of the structure superior to the maxilla i.e. the eye appears to be a consistent feature (Marx, 1922).

Pathogenesis

Staphylococcus aureus has been under implicated as the organism responsible for acute osteomyelitis in infants (Asherson, 1939; Haworth, 1947; McCash and Rowe, 1953; Niego, 1970; Nade, 1983). In osteomyelitis of the jaws infection may reach bone as a result of:

1. Local trauma of the overlying mucosa of the alveolar ridges (Hitchin and Naylor, 1957; Nade, 1983).
2. Local injury to bone.

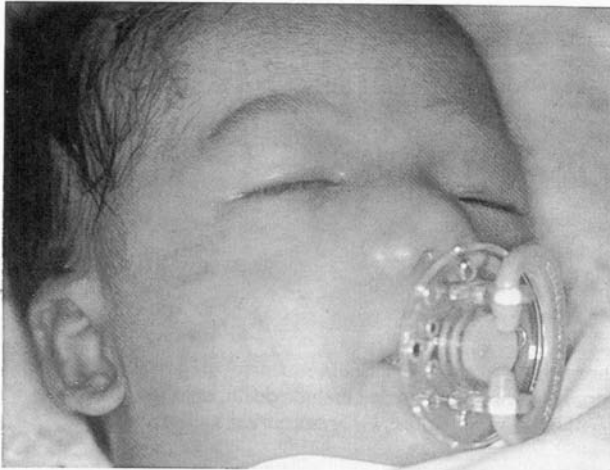


FIG. 1

Swelling of the right cheek and eye and redness of the medial canthus of a new born infant.

3. Extension of infection from adjacent teeth or soft tissues.
4. Haematogenous spread from distant sources. This term is generally confined to those cases in which a definite antecedent infection has been found in the body at some distance from the location of the osteomyelitis e.g., chest, ear, cutaneous (Bass, 1928; Lacey and Engel, 1939; Heslop and Rowe, 1956; Nade, 1983) and umbilical cord (Nade, 1983). The infection in the bone and the antecedent infection should be due to the same organism.

Clinical manifestation

Cases previously reported ranged in age from one week to 15 weeks old (Lacey and Engel, 1939; Haworth, 1947; McCash and Rowe, 1953) with no predilection for gender. The maxilla is bounded superiorly by the orbit and lacrymal apparatus, medially by the nasal cavity and inferiorly the dentition and oral cavity. By virtue of its smallness, osteomyelitis of the maxilla in infants can rapidly spread to the orbit, nasal and oral cavities. Redness and swelling of the tissues around the orbit and especially at the medial canthus of the eye are early features of the condition. As the condition worsens, proptosis, chemosis and ophthalmoplegia may occur. As the periorbital swelling spreads to other parts of the face, unilateral nasal discharge of the affected side may become apparent. In the oral cavity, there is swelling and subsequently fluctuation of the canine fossa area, the vestibule and the palate on the affected side. As the disease progresses there will be sinus formation and a purulent discharge.

Treatment

With early diagnosis and timely medical and surgical intervention, the normal course of the disease is recovery, although in earlier reports deaths have been recorded (Asherson, 1939; Haworth, 1947). Ophthalmological complications could include visual impairment as a result of excessive pressure on the globe and stenosis of the lacrymal duct (Macbeth, 1951). Possible laryngological complications include mastoiditis, otitis media

(Haworth, 1947) and rhinolith (Macbeth, 1951). In the case of the oral structures, since the dentition is at a developmental stage, hypoplasia and hypomineralization of the dentition can be expected (Hitchin and Naylor, 1964).

Previous reports suggested the use of penicillin for the treatment of this condition. However because of the high possibility of *Staphylococcus aureus* developing penicillin resistance, recent reports have suggested the use of second generation cephalosporins or penicillinase-resistant penicillin (Mlay and Shija, 1985; Dodson *et al.*, 1987). This case was treated with cloxacillin with rapid resolution of the condition and as yet no apparent complications. When there is abscess formation, incision and drainage, culture and sensitivity would be indicated and a suitable antibiotic substituted.

Conclusion

A rare case of osteomyelitis of the maxilla in an infant is reported. With prompt diagnosis and treatment rapid resolution took place with no untoward complications related to the eye and nasal structures. The effect on the dentition is yet to be seen.

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