

Orbital cellulitis in a neonate of the tooth bud origin : A case report

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Orbital cellulitis is a serious, yet uncommon infection in neonates. It can result in significant sight and life threatening complications. Most commonly, it occurs secondarily as the result of a spread of infection from the sinuses. Orbital cellulitis, secondary to dental infection is rare. We hereby report a case of orbital cellulitis secondary to dental infection in a 15-day-old neonate without any systemic features.

Key words: Odontogenic orbital cellulitis, orbital cellulites, tooth bud abscess

Orbital cellulitis in neonates is a potentially lethal condition that can result in significant complications including blindness, cavernous sinus thrombosis, meningitis, subdural

emphysema and brain abscess.^[1] Orbital cellulitis is usually a complication of infection in the paranasal sinuses (60-80%)^[2,3] and is infrequently the result of an infection of dental origin (2-5%).^[4,5]

To our knowledge only one case of a neonate with orbital cellulitis secondary to dental infection has been reported. We hereby report a case of orbital cellulitis in a 15-day-old neonate without systemic features, secondary to the tooth bud abscess.

Case Report

A 15-day-old female neonate patient was brought with history of a sudden onset proptosis of the left eye for three days. There was no history of trauma, fever or any systemic complaints. She was delivered normally at full term without any significant antenatal or postnatal complications. She was exclusively breastfed. Vital signs including pulse, temperature, and respiratory rate were within normal limits.

Ocular examination revealed an axial proptosis of the left eye with limited ocular movements in all directions [Fig. 1]. The left eyelid was swollen and inflamed. Anterior segment examination was normal. Pupillary reaction and fundus examination were also normal. The right eye was normal. Systemic examination revealed no abnormalities except the presence of a tooth bud abscess in the left maxillary alveolar ridge with overlying facial swelling [Fig. 2].

Hematological investigations showed the following results: Hemoglobin- 14.5 gm%, PCV- 57.4%, total leucocyte count- 17,000/mm³, neutrophils- 52%, lymphocytes- 48%, platelet count- 483,000/mm³, urea- 28 mg/dl, creatinine- 0.8 mg/dl. Microbiological examination of the urine was normal. Blood and urine culture revealed no organisms.

Microbiological investigation of both conjunctival and oral swabs grew *Staph aureus* that was sensitive to amikacin, vancomycin, ofloxacin, gentamicin, cefotaxime, co-trimoxazole and resistant to penicillin and cefalexin.

CT scan of the head and orbit showed a dense soft tissue

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lesion of size 2.5×1.2 cm in the extraconal space of the left orbit and pre-septal region causing anterolateral displacement of the globe. Recti muscles were not clearly visualized on CT scan. The sinuses were normal. The findings were suggestive of the left orbital cellulitis [Fig. 3].

The neonate was admitted and administered intravenous injections of vancomycin of 60 mg/kg/per day in two divided doses with amikacin of 20 mg/kg three times daily and oral metronidazole of 25 mg/kg/three times daily for 14 days. The tooth bud abscess improved with this conservative management. Within 24 hours of the initiating treatment, there was an improvement in extraocular movements and decreased proptosis. The patient was discharged after two weeks and prescribed Augmentin syrup for another two weeks. At one month of follow-up, the condition of the neonate was much improved with no proptosis and full extra-ocular movements. [Fig. 4a and b]

Discussion

Orbital cellulitis is a rare, but potentially lethal condition in children that has been occasionally reported in infants.^[1]



Figure 1: Left eye proptosis with orbital cellulitis

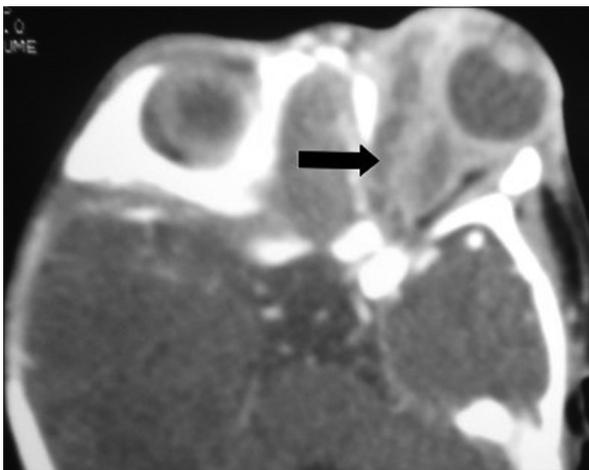


Figure 3: Soft tissue density lesion of size 25×12 mm in extraconal space in the left orbit and pre-septal region causing anterolateral displacement of globe. Features suggestive of the left eye orbital cellulitis with pockets of abscess formation

At maximum, ten cases of infants have been reported in the literature.^[6-10]

Orbital cellulitis due to dental infection has been reported in children and adults, but only one case has been reported in a neonate.^[4,5] Laura *et al.*, reported a 24-day-old neonate with orbital cellulitis accompanied by a sub-periosteal abscess of the dental origin.^[7]

Dolter *et al.*, reported a case of orbital cellulitis in a one-month-old secondary to ethmoidal sinusitis.^[8] Harris reported a case of orbital cellulitis in a one-week-old secondary to septic thrombophlebitis from an intravenous line in a scalp vein.^[9]

Tanuja A *et al.*, reported the same in a nine-day-old neonate with septic arthritis of the left ankle joint and ethmoidal sinusitis.^[10]

Most of the previously reported cases presented with systemic features that were absent in our case.

The patient could have acquired the infection through a contaminated nipple during the breastfeeding, which then spread to a labial ulcer or prominent tooth bud on the left side. The infection could have then tracked subperiosteally and



Figure 2: Showing tooth bud with abscess in left alveolar maxillary area

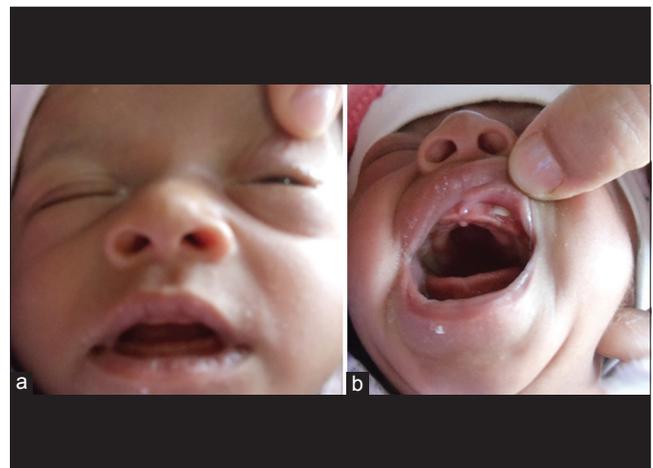


Figure 4: Follow-up at one month (a) Decrease in proptosis (b) neonatal tooth with no abscess

entered the soft tissue, causing orbital cellulitis with abscess formation.^[7] The management of orbital cellulitis in neonate and infants is challenging and must be treated urgently so as to prevent more serious complications.

In the presence of a dental abscess, the treatment with medication alone is usually insufficient. It is necessary to remove the source of infection, which can be achieved through abscess drainage. Antibiotic treatment of orbital cellulitis should include broad spectrum coverage against both aerobic and anaerobic organisms, including oral pathogens.^[4,5] In this case, *Staph aureus* was present in both infection sites. However, the patient showed significant improvement with medical management alone within 24 hours of initiating antibiotic treatment.

While conservative treatment was used in this case, Harris' protocol calls for emergent drainage of the abscess if vision is compromised and urgent drainage (within 24 hours) of large abscesses causing pain, superior or inferior extension, intracranial infection, or those of anaerobic or dental origin.^[9]

In the case reported by Laura *et al.*, the condition of the baby worsened and proptosis increased with medical management alone, therefore surgical decompression and subsequent sinus drainage became necessary.^[7] Fortunately, our patient showed improvement with medical management alone. However, had our patient's condition worsened, surgical removal of the abscess would have been necessary.

In conclusion, orbital cellulitis can be present in the absence of typical systemic features. A complete examination of the oral cavity to determine the dental origin of infection should be carried out. Regardless of the patient's age, early diagnosis and prompt treatment with proper antibiotics coverage can

result in a good prognosis for the patient.

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