Case Report

Orbital abscess in an infant: A rare presentation of sinusitis

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ABSTRACT

Background: Orbital abscess is a very rare occurrence in early infancy.
Case characteristics: A 40 days old infant brought with fever and sudden onset proptosis with eye lid erythema and edema of the left eye.
Outcome: The infant required emergent drainage of abscess and multiple concomitant procedures to drain out pus completely. He got better with appropriate antibiotics and surgical intervention.
Message: Orbital abscess in some babies may need aggressive repeated surgical intervention along with appropriate antibiotics.
Keywords: Acute Rhinosinusitis, post septal cellulitis, Orbital Abscess.

Introduction:

Periorbital cellulitis is an infection of the soft tissues surrounding the eye. Periorbital infections are classified as preseptal cellulitis and orbital cellulitis. Preseptal cellulitis involves the soft tissues of the eyelids in front of the orbital septum and orbital cellulitis involves the soft tissues of the orbit behind the orbital septum. Orbital abscess is a complication of orbital cellulitis where pus accumulation is seen. It can occur via direct inoculation, haematogenous spread or contiguous spread from adjacent structures like sinuses. It is a serious infection that can result in grave complications, including blindness, cavernous sinus thrombosis, meningitis, subdural empyema, and brain abscess.¹

Case report

We report a case of a 40 days old healthy male baby referred with history of fever of 2 days followed by sudden onset proptosis and redness of the left eye. There was no history of trauma or any other significant event in the past. He was delivered full term with average birth weight and was exclusively breast fed. On examination the child was irritable with age appropriate vitals and a stable blood pressure. Ocular examination showed marked proptosis, swelling and erythema of left eyelid, and normal pupillary reaction on both sides. There was restricted left eye ball movement.

His WBC count was 13600 and platelets were 4.23 lakhs/cmm. Electrolytes and end organ functions were normal. The baby was started on Ceftriaxone along with Vancomycin to cover for methicillin resistant staphylococcus infection. Intravenous steroids were also given to reduce the inflammatory component of infection.

An urgent CT scan was done which revealed left orbital cellulitis with abscess formation and maxillary and ethmoidal sinusitis. Same day surgical drainage of abscess was done through anterior orbitotomy via external approach under general anesthesia. 10ml of pus was aspirated. The proptosis resolved significantly post operatively. On day 4 of hospitalisation, swelling and proptosis recurred and he developed signs of VI nerve palsy with unequal pupils and a convergent squint. Urgent contrast enhanced MRI brain was done, it showed presence of an abscess 18x5 mm in the medial extraconal compartment of left orbit in continuity with left ethmoidal mucosal thickening. (Figure 1) There was another multiloculated abscess 20x7x10mm surrounding the lateral rectus muscle with both intraconal and extraconal components. Fundus examination showed normal optic disc. The baby was again operated, and pus was drained and, in this setting, functional endoscopic sinus surgery

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(FESS) was also done. FESS showed inflammation of orbital periosteum and ethmoidal recess. Anterior ethmoidectomy was done. There was no obvious pus in the sinuses. The pus sent on day 1 grew methicillin sensitive Staphylococcus Aureus (MSSA) and hence flucloxacinill was added.

Figure 1 : CT brain showing abscess in the medial extraconal compartment of left orbit.

Following this procedure, on Day 6 the infant continued to have proptosis and erythema. A boggy swelling was also noticed on the lower eyelid. He was again taken in OT and pus was aspirated again for the medial aspect as well an infratemporal subcutaneous incision was taken and pus was drained. During this procedure an infratemporal subcutaneous drain was kept in situ. Repeat pus culture sent was sterile. After the last procedure the proptosis reduced and didn’t recur. After 72 hours, the operative drain was removed. Gradually swelling of eyelids subsided. 2 weeks of intravenous antibiotics were given and the baby was sent home on 1 week of oral antibiotics.

Discussion:
Orbital cellulitis and abscess is a rare but potentially dangerous and life threatening complication of acute Rhinosinusitis (ARS). Although the overall incidence of orbital complications is 3-4% in children affected by ARS but the incidence is rare in the infantile age group and only a few cases have been reported so far. Ethmoidal sinusitis has been found to be the most common cause of orbital cellulitis in children. Periorbital cellulitis has been subdivided into 2 entities: preseptal cellulitis and post septal cellulitis or orbital cellulitis. CT scan of the orbit helps differentiate the two entities. Presence of proptosis and ophthalmoplegia is a hallmark of post septal cellulitis and warrants aggressive management. CT scan should be done immediately for these children. Children presenting with just erythema and eye lid swelling without proptosis need not undergo CT scan, and can be started on I. V antibiotics and assessed for response. In our case we did an emergent CT in view of fast progression of the proptosis.

Microbes associated with orbital abscess are Staphylococcus aureus (MRSA and MSSA) and Streptococcus species (Strep. Milleri, Strep Pyogenes, Strep Aginosus, Strep Pneumonae). In older children Fusobacterium, Peptostreptococcus, Moraxella and other anaerobes have been isolated and reported in some studies. In our case MSSA was isolated. Antibiotic therapy should therefore be directed to cover these organisms. A third generation cephalosporin or combination of Penicillin – Sulbactam along with Metronidazole seems to be a prudent choice. In seriously ill children and suspected intracranial complication empiric coverage for MRSA is helpful. Vancomycin is considered the gold standard for therapy of MRSA.

The treatment depends on the staging based on Chandler classification. Stage 1 and 2 can be managed just by IV antibiotics. Stage 3 onwards needs surgical drainage of pus. Our infant was in stage 4, had an aggressive form of orbital abscess. Multiple surgeries were needed to drain out pus as it was re-accumulating. Such an aggressive disease needs multidisciplinary approach involving Ophthalmologist, Otorhinologist and sometimes neurosurgeon who would do drainage simultaneously. Our infant kept on reaccumulating pus in spite of repeated orbital tapping and needed three surgeries. One possible reason could be inadequate pus drainage in first instance or virulence of organism coupled with low immunity in neonates. However, procedure in such a small infant is very challenging and demands very high level of expertise. Small orbits and risk of damage to the surrounding structures and vital nerves and vessels is inherent when performing drainage and extreme caution has to be taken while draining to avoid damage to any vital
structures around the eyes. The bony anatomy is also not developed completely hence placement of a drain for a few days may help in draining any residual pus. According to a recent neonatal case series, 16 neonates with Orbital cellulitis, twelve patients required surgical drainage which is a very high incidence as compared to the same in pediatric population.3,6 We report our case as the baby needed multiple surgical interventions and it was technical challenge for Otorhinologist, Ophthalmologist and us. Subjecting a 40-day old baby to so many concomitant surgeries took a lot of thinking and counselling.

In conclusion, cases with orbital cellulitis at an early age should raise the suspicion of ARS. Smaller the age, higher is the risk of intracranial complications and emergent drainage is needed. Early diagnosis with prompt treatment using appropriate antibiotics and drainage can save the eyes and life of the child and lead to good outcome.

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References

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