



Orbital cellulitis with subperiosteal abscess in a neonate

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Abstract :

Orbital cellulitis in neonatal period (0-28 days) is very rare and only few cases have been reported in the literature throughout the world .This is a case report of 23 day old neonate presented with orbital proptosis and radiological evaluation revealed orbital cellulitis with subperiosteal abscess.The source of infection was from ethmoid sinus .The neonate was managed conservatively with antibiotics and baby showed complete resolution of the abscess.This case is presented for its rarity and to emphasise the role for conservative management in treating subperiosteal abscess in neonates without criteria for immediate surgical intervention.

Keyword :orbital cellulitis ,ethmoid sinus,subperiosteal abscess

Introduction:

Orbital cellulitis is defined as inflammation of the orbital tissue posterior to the orbital septum presenting with proptosis, strabismus with impairment of visual acuity ¹. This has to be differentiated from periorbital cellulitis which is inflammation

anterior to orbital septum .Orbital cellulitis can be differentiated clinically from periorbital cellulitis with proptosis the important finding in orbital cellulitis² . Strabismus or visual acuity testing cannot be accurately done in neonates as in pediatric age group, complicating the clinical differentiation between orbital and periorbital cellulitis. The source of infection in orbital cellulitis is usually from ethmoid sinus whereas in periorbital cellulitis the source is from cutaneous infection elsewhere.

Case summary:

23 days old term 39 3/7 singleton neonate born to primi mother by emergency caesarian with birth weight of 3500gram at subdistrict hospital was brought to our institute with proptosis of right eye .The antenatal period was uneventful with no risk for maternal sepsis in the peripartum period .The neonate was on exclusive breast feed . On day 3 of life baby presented with bilateral swelling of both eyes which was treated with topical eye drops at subdistrict hospital with complete resolution .Subsequently brought back to same hospital on day 16 with right eye proptosis and fever .Baby was treated with

intravenous antibiotics (cefotaxime and cloxacillin) which did not show any improvement. Further investigation with computed tomography of the orbit showed orbital abscess and hence baby was referred for further management.



subperiosteal abscess neonate with right eye proptosis

Clinical examination of the baby at our institute revealed an alert, normothermic stable baby. Other system examination including bones and joints was normal. Laboratory investigation revealed positive C reactive protein with normal counts and sterile blood culture. Ophthalmologic examination revealed right eye proptosis with no signs of inflammation and the left eye was normal. Baby was treated with intravenous antibiotics cloxacillin and amikacin. A week later baby was noted to have a bulge on right side of the hard palate

for which nasal endoscopy was performed and it did not show any abnormality. The palatal swelling subsided with antibiotics of 2 week duration. After 2 weeks of antibiotics MRI of the orbit showed complete resolution of orbital abscess with residual ethmoidal and maxillary sinusitis. Clinically baby had complete resolution of proptosis with normal pupillary reflex. The baby was discharged on day 37 of life.



MRI showing ethmoidal and maxillary sinusitis MRI showing resolution of subperiosteal abscess



Discussion:

Orbital cellulitis in neonates is a rare presentation. So far only 8 cases of neonatal orbital cellulitis have been reported till 2000 (cruz et al)³ There have been only isolated case reports of neonatal orbital cellulitis from 2000 till date. Even though the pathogenesis for causation is explainable, the rarity of presentation and the colonisation of the organism remains obscure. The source of neonatal orbital cellulitis is usually from the ethmoid sinus which are well developed in neonates.⁸ Thin porous medial wall of the orbit, incomplete orbital septum, valveless venous plexus and impaired immune defense in neonates enhance easy access to the organism into the orbit from nearby ethmoid sinus¹. Orbital complications from underlying ethmoid sinusitis occurs in 5 stages (chandler's classification)⁶. The dreaded complication being cavernous sinus thrombosis and the others being subperiosteal abscess, intraorbital abscess, meningitis, optic neuritis.

Staphylococcus is the commonest organism implicated in causing neonatal orbital cellulitis. Recent reports conclude increased incidence of methicillin resistant staphylococcal infection (MRSA) in the causation of neonatal orbital cellulitis⁴. Empirical treatment with vancomycin should be considered if there is suspicion of MRSA by previous growth in the neonatal intensive care. In our case even though the sepsis screen was positive we could not isolate the organism, probably because of prior antibiotic treatment. The blood culture positivity rate in orbital cellulitis is low and high whenever pus is cultured. Subperiosteal abscess is the commonest complication of neonatal orbital cellulitis (80%) from observational studies³, necessitating the role of computed tomography /MRI in evaluation of all cases once suspected. The subperiosteal abscess is usually located close to the medial wall and contrast CT could easily differentiate from periorbital cellulitis.

Medical or Surgical are the two modes of treatment available for orbital cellulitis with subperiosteal abscess. Medical management includes intravenous antibiotics for 14 days and surgical management includes drainage of pus⁷. Surgical management is done whenever the pupillary reflexes are impaired (which denotes involvement of optic nerve) while the baby is on antibiotics, non medial location of subperiosteal abscess, age group less than 9 years, large abscess and repeat episode of abscess⁵. This criteria for surgical intervention has been proposed by Harris et al.

In the age group less than 9 years with orbital cellulitis medical management responds well. The good clearance observed in this age group (including neonatal age group) is due to infection with single organism, wide ostium in the sinus⁸. Our case had the criteria for conservative management including age, medial location of subperiosteal abscess, first episode of abscess with normal pupillary reflex. The additional involvement of maxillary sinus is unique in our case. The palatal bulge noticed could have been due to the associated maxillary sinusitis.

Conclusion:

Neonatal orbital cellulitis being a rare entity needs careful evaluation to differentiate from periorbital cellulitis. Radiological imaging is mandatory in this condition and combined with clinical presentation of proptosis would help in diagnosis of the condition. Conservative management of subperiosteal abscess is to be considered as first line and intervene surgically only if defined criteria are met.

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