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CASE REPORT

Odontogenic Pansinusitis with Orbital Cellulitis in a Child

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ABSTRACT

Dental infection is a common cause of maxillary sinusitis with or without ethmoidal sinus involvement. Rarely do these lead to orbital cellulitis in children. We report a case of a 4-year-old child who presented with an odontogenic left pansinusitis with orbital complications.

Keywords: Odontogenic; Sinusitis; Orbital cellulitis.

CASE REPORT

A 4 year old female child presented to our casualty with high grade fever with chills, periorbital edema and pain with inability to open her eyes. A history of photophobia and nasal stuffiness was present. The mother reported that child complained of toothache two days prior for which she was shown to a local doctor and Amoxycillin was started. However, the symptoms progressed rapidly over the next 48 hours.

A diagnostic nasal endoscopic examination revealed copious mucopurulent discharge from the left nostril. Oedematous boggy mucosa of the left lateral wall was noted. No other significant finding was seen. Child was initially managed conservatively with IV antibiotics and analgesics. Her condition did not improve. MRI and CT scans of brain with paranasal sinuses and orbit were taken. The former showed left orbital cellulitis with no evidence of orbital abscess or cavernous sinus thrombosis. The CT scan showed diffuse opacification of left frontal, ethmoidal, maxillary and sphenoid sinuses suggestive of pansinusitis (Fig 1). Nasal discharge culture and sensitivity grew Staphylococcus aureus, sensitive to the ongoing antibiotics.

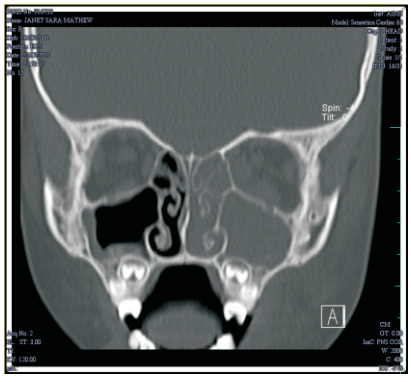

Fig 1. CT Paranasal sinus, coronal view, showing complete opacification of left maxillary and ethmoid sinuses and ostiomeatal complex as well as generalized left sided facial oedema

Ophthalmology and Dental consultations were given.

Ophthalmology findings: Severe upper eyelid oedema was noted. Other findings could not be appreciated because child was uncooperative. However vision appeared normal.

Dental findings: Upper left primary first molar was found to be decayed with carious pulp exposure. She was taken up for dental extraction under GA. Frank pus was present. We did a minor endoscopic sinus surgery consisting of medial maxillary antrostomy and clearing of the anterior and middle ethmoidal cells. No pus was noted.

The Ophthalmologist carried out an incision and drainage over the upper eye lid, but no pus was found in the preseptal or postseptal compartments.

Post operatively she was started on intra-venous Amoxycillin with Clavulanic acid for 7 days and then changed to Cefotaxime for another 7 days. At the time of discharge, the child had symptomatically improved. Orbital edema subsided. Full eye movements were present in all directions. At latest review, two months post-operative, the child has only a minimal residual cheek induration.

DISCUSSION

Orbital inflammation and sinusitis have a close association and is commonly encountered by ophthalmologists and otolaryngologists alike. This is due to the close anatomical relationship of the sinus and orbit. More than half the circumference of the orbit is lined by thin plates of bone of which the other side is a sinus cavity. Orbit is bound superiorly by the floor of the frontal sinus, inferiorly by the roof of the maxillary sinus and medially by the lateral wall of the ethmoid sinus[1]. Infection may spread from sinus to orbit either by direct extension or by numerous valveless communicating veins between them. The superior orbital fissure connects directly to the cavernous sinus and the intracranial space. The facial veins drain directly into the valveless superior and inferior ophthalmic veins. These, in turn, drain via many anastomoses into the cavernous sinus[2].

The close association between dental infection and maxillary sinusitis is also well known. The root apices of the upper first and second molar teeth lie in close proximity to the floor of the maxillary sinus[1]. The root apices typically are separated from the sinus by a distinct bony partition. However, in one-third of the population, this may be absent in the region of first and second molars, leaving the air filled antra separated

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from the root apices by only mucosa[3]. Both dental infection and extraction have been known to lead to maxillary sinusitis[1]. Acute sinusitis typically presents clinically in the maxillary sinuses. However, pan-sinusitis with involvement of the ethmoidal, frontal and sphenoidal sinuses is more commonly seen. The organisms most commonly implicated are Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis. In odontogenic sinusitis, the most commonly associated pathogens are anaerobic Streptococci, Bacteroides, Proteus and coliform bacilli[4]. In our case, the nasal discharge culture grew Staphylococcus aureus.

Isolated maxillary rhinosinusitis rarely gives rise to acute local complications. Patients with acute swelling of the cheek are almost invariably suffering from a complication of primary dental disease rather than sinus infection, although there might be an associated maxillary rhinosinusitis secondary to dental infection[5].

Paranasal sinus disease complications are more common in children than adults. The spread of infection from nose and paranasal cavities to the surrounding brain and orbit is facilitated in children by the dehiscences in the common bony walls at the suture lines, the thinness of the cranial bones and the relative immunosuppression of the child under the age of five[6]. Maxillary and ethmoidal sinuses are present at birth. Frontal and sphenoid sinuses develop by the age of 5 or 6 but attain clinical significance by 10 to 12 years of age.

Management consists of culture-sensitivity directed parenteral antibiotics and evacuation of the pus, where indicated. Possible loss of vision in advancing orbital cellulitis may warrant emergency procedure for sinus and orbital clearance, either externally or by endoscopic sinus surgery. In our case, dental extraction and appropriate parenteral antibiotics sufficed.

In our search of literature, we could come across only two such case reports (dental infection leading to sinusitis and orbital complications in a child). This case is being reported in view of its rare occurrence in children, which is otherwise common in immuno-compromised people.

REFERENCES

1. Glenis Scadding and Helen Caulfield, Paediatric Rhinosinusitis. In: Michael Gleeson, Scott-Brown's Otolaryngology, Head and Neck Surgery 7th ed Vol 1, London:Hodder-Arnold, 2008:1080-7
2. Donald B Hawkins, Richard W Clark, Clinical Paediatrics 1977; 16(5):464-71.
3. Abrahams and Glassberg, Dental Disease: A Frequently Unrecognized Cause Of Maxillary Sinus Abnormalities. Am J Rhinol 1996;166:1219-23.
4. Pushkar Mehra, Alfonso Caiazzo, Susan Bestgen. Odontogenic Sinusitis Causing Orbital Cellulitis. J Am Dent Assoc 1999 JULY; 130:1086-92
5. Rosen D, Ardekian L, Abu Al Naaj, et al. Orbital Infection Arising From A Primary Tooth:A Case Report. Int J Paediatr Dent 2000; 10(3):237-9.
6. Robert Slack,Richard Sim, Complications Of Rhino-sinusitis. In: Michael Gleeson, Scott-Brown's Otolaryn-gology, Head and Neck Surgery 7th ed Vol 2, London:Hodder-Arnold, 2008:1539-40