

Combined Surgical Approach in a Late Case of Orbital Cellulitis

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Case Report

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Introduction

Orbital cellulitis is a potentially life-threatening but uncommon ophthalmic emergency characterised by infection of the soft tissues behind the orbital septum [1]. As such, rapid diagnosis and prompt initiation of therapy, medical and/or surgical, are important in order to minimize complications and optimize outcomes. Mucocoele is a chronic, expanding, mucosa-lined lesion of the paranasal sinus characterized by mucous retention that can become infected forming a mucopyocele [2]. A mucopyocele when extends into the orbit, can present as acute orbital cellulitis, as was the case in our patient [3]. The management of orbital cellulitis is primarily medical with prompt initiation of intravenous antibiotics. Surgical intervention should be considered in patients who fail to respond or deteriorate on medical therapy, display worsening visual function/pupillary changes, or develop an orbital abscess, particularly in those cases in which the primary cause requires surgery too. However it is recommended that the treatment approach should be case based [4]. We describe a case of late presentation of acute orbital cellulitis subsequent to a frontoethmoidal mucopyocele extending into the orbit treated with a combined conventional external orbitotomy and newer endoscopic approach.

Case report

A 12-year-old female patient presented with progressive left eyelids swelling since 1 week. There was associated acute pain, redness along with downward and outward protrusion of the left eyeball. Patient complained

of diplopia and mild diminution of vision in the left eye. Also there was history of fever with chills since 10 days and intermittent frontal headache since last 2 years. There was no history of projectile vomiting, nasal discharge or toothache. On local examination, there was fluctuant, erythematous, non-pulsatile, tender swelling in the upper eyelid of the left eye along with ptosis. The left eyeball was pushed inferiorly and laterally causing a proptosis of 26mm (Figure 1).



Figure 1: Clinical photograph of the patient showing left eyelid swelling, erythema, ptosis and left eye downward outward proptosis.

Vision was 6/12 in the left eye and ocular movements were painful and restricted in all gazes. On fundus examination, there was blurring of disc margins along with venous dilatation and tortuosity in the left eye. All the findings in the right eye were within normal limits. There was history of left sided endoscopic frontal sinus

surgery 3 months back. A clinical diagnosis of acute orbital cellulitis was made. On contrast-enhanced CT scan, there was a large, expansile, cystic lesion arising from the left frontal and ethmoid air cells extending into left retrobulbar space destroying the lamina papyracea, posterior wall of frontal sinus and eroding the floor of the anterior cranial fossa (Figure 2).

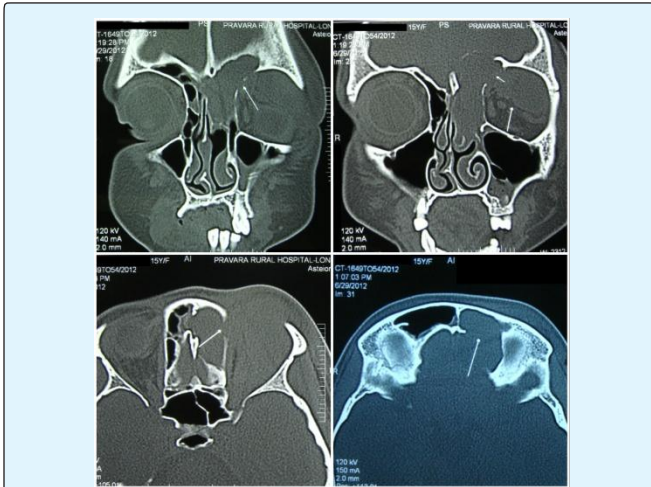


Figure 2: CT scan images showing homogenous isodense well defined cystic lesion eroding the lamina papyracea, posterior frontal sinus wall extending into the left retrobulbar space.

MRI scan suggested that the lesion was bi-loculated, the medial one in close proximity with the left frontal lobe of the brain and the lateral loculus extending into the orbit causing proptosis of the left eyeball (Figure-3).

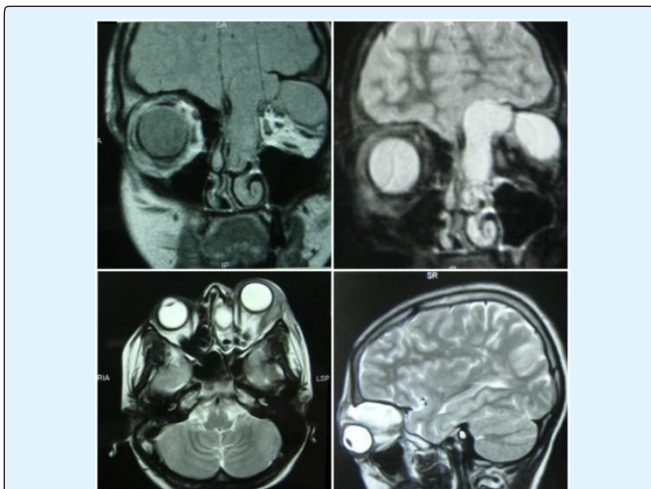


Figure 3: MRI Orbit suggestive of a bi-loculated lesion which is iso-hypointense on T1W images and hyperintense on T2W images with characteristic rim enhancement on post-contrast study. The mass is seen eroding the superomedial wall of the left orbit displacing the eyeball laterally and downwards, and extending to anterior cranial fossa.

We started the patient on intravenous amoxicillin and clavulanate potassium combination, amikacin and metronidazole along with anti-inflammatory and pain killers. In spite of starting the patient on intravenous antibiotics and anti-inflammatory, her visual acuity deteriorated to 6/36 in the left eye and there was colour vision defect on testing with Ishihara's charts. There was worsening of proptosis to Hertel value of 30mm. Fundoscopy revealed choroidal folds and indentation of the superior hemisphere of the retina. The patient was planned for surgery. Firstly, endoscopic drainage of the medial loculus of the mucocoele was done along with marsupialization by the axillary flap technique. Subsequently, the external orbitotomy was done using the Benedict incision for complete drainage and removal of the lateral orbital loculus along with the mucosa. A Rains frontal sinus stent was used for stenting the frontal sinus during marsupialization and silicon drains were placed in the external orbitotomy incision. Both were removed subsequently after 12 weeks and 1 week respectively. Postoperatively, the patient received intravenous antibiotics to which she responded very well with steady decrease in proptosis, swelling and fever over the next seven days. Eyelid edema subsided fully after two weeks of treatment (Figure 4) with free and full movement of eyeball in all directions of gaze and normal colour vision along with normal visual acuity in the left eye. There were no choroidal folds on fundoscopy.

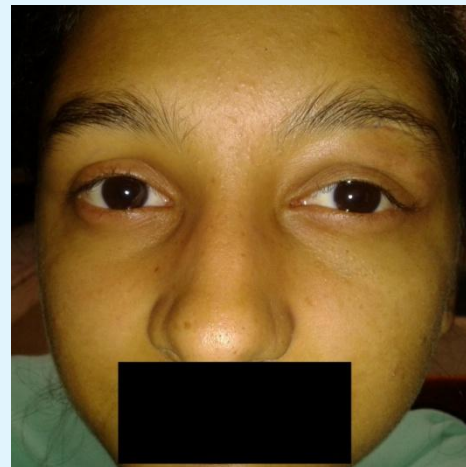


Figure 4: Subsidence of eyelid edema, proptosis and ptosis 2 weeks after surgery.

Discussion

Orbital cellulitis describes infections that involve the tissues posterior to the orbital septum within the bony orbit [5]. Orbital cellulitis affects all age groups but is more common in the adolescent population. The most frequent cause of orbital cellulitis is secondary extension

of infection from the paranasal sinuses, particularly from the ethmoid sinus given the thin medial orbital wall. Other notable causes of orbital cellulitis include trauma with associated orbital fracture or foreign body, dacryocystitis, dental infections, and untreated preseptal cellulitis [6]. Mucocoeles of the paranasal sinus are slowly expanding lesions which consist of accumulation of mucus and epithelial debris in the mucosa of the sinus subsequent to obstruction of the ostium of the sinus. They affect most commonly the frontal sinus. If there is acute infection of mucocoele, leading to mucopyocele, there is higher likelihood of complications mainly orbital or intracranial [7]. In our case the frontoethmoidal mucopyocele had extended into the orbit causing acute orbital cellulitis and abscess formation. The globe itself was compressed superomedially, resulting in the development of chorioretinal striae. A progressive optic neuropathy from compression of the orbital portion of the optic nerve occurred as the mucocoele expanded posteriorly to compress posterior orbital structures [8]. Given the potential for significant complications, intravenous antibiotics should be started promptly for all cases of orbital cellulitis [9]. Surgical drainage is considered in case of non-response to medical treatment, subperiosteal or orbital abscess formation, or presence of signs of optic neuropathy. The surgical drainage can be endoscopic alone, open drainage or combination of open and endoscopic drainage [10]. In our case, there were two abscess cavities with one abscess extending medially upwards towards the roof of the orbit and the other one spreading laterally and posteriorly into the retrobulbar space. Also there was history of previous sinus surgery. Because of the failure to medical therapy, worsening visual function, and presence of two large orbital abscesses, surgical intervention was done in our patient.

We used the combined external and endoscopic approach to get a wide drainage of marsupialization of the medial abscess via the transnasal endoscopic approach and adequate excision of the lateral abscess via the external orbitotomy approach. The combined approach gave us an added advantage of treating the sinus pathology along with the abscess drainage, thus reducing the chances of recurrence. Ours is a case of very late presentation of acute orbital cellulitis having two separate orbital abscesses subsequent to frontoethmoidal mucopyocele. The nasal abscess was easily accessible through the nasal endoscopic method but the temporal one could not be drained through that route as it was a thick encapsulated loculus which was beyond the reach of the endoscopic approach. The uniqueness of this case is very late presentation, two separate abscess loculi which were treated successfully with two simultaneous different surgical approaches- transnasal endoscopic and external orbitotomy, resulting in complete recovery. In spite of

being a relatively uncommon late presentation of frontoethmoidal mucopyocele, orbital cellulitis remains a potentially sight and life threatening infection that requires careful examination and prompt treatment. Through this article, we are laying emphasis on the fact that orbital abscess can have varied presentations depending upon the extent and complexity of the lesion, and hence, conventional preferred surgical approaches cannot be applied in all such cases. An individualized therapeutic approach should be undertaken for each case.

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