

Case Report

## Frontal Epidural Empyema as A Complication of Resolving Periorbital Cellulitis

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### Abstract

A thirteen years old girl presented with right periorbital cellulitis and right pansinusitis. She made a good recovery on intravenous antibiotics and nasal decongestant. However, she developed signs of frontal lobe involvement. CT scan showed epidural empyema with no bony wall destruction. Microbiology reported streptococcus milleri (anginosus) as the causative organism. Medical management was successful under combined ENT and neurosurgical care.

### Objective

Acute sinusitis in children can develop into periorbital cellulitis and late extra and intracranial complications such as epidural abscess formation. We present this article to highlight the severity of this type of complication when patients are taken care by General Practitioners, Paediatricians and Otorhinolaryngologists

### Conclusion

Medical management of epidural empyema when there is no bony wall destruction can lead to safe recovery.

**Keywords:** Sinusitis; Epidural Abscess; Child; Periorbital Cellulitis

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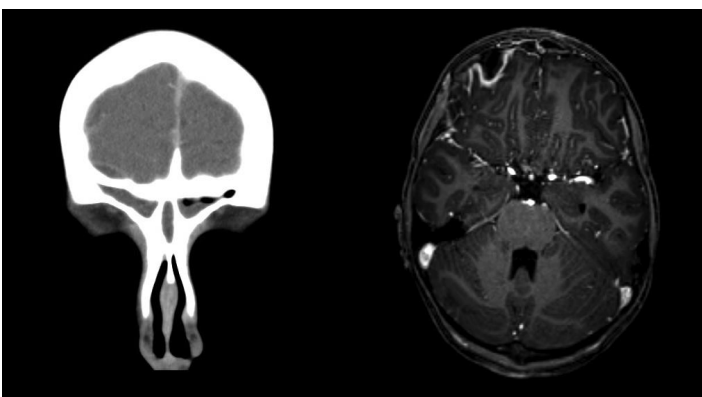
A 13 years old girl presented with right side periorbital cellulitis as per Chandler's Classification of orbital complications of acute sinusitis [1]. She had no neurological symptoms at presentation. Her nasal examination with anterior rhinoscopy and fiberoptic nasal endoscopy showed mucopurulent discharge on the right side. She had mild fever, leucocytosis and neutrophilia. She was admitted to hospital for intravenous

antibiotic (co-amoxiclav) treatment, nasal decongestant and observation. Ophthalmology review confirmed no ocular or extraocular pathology. She continued to respond to conservative treatment within three days from admission. Her microbiology nasal swab was reported as Streptococcus milleri (anginosus). Gradually, the patient became confused, had a behavioral change and developed seizures. She needed endotracheal intubation. A CT scan showed a right frontal lobe epidural empyema associated with right pansinusitis. (Figure 1)

Following neurosurgical opinion, no surgical intervention was required but to continue intravenous antibiotic treatment with neurological observation. She was extubated the following day and fully recovered after receiving intravenous Meropenem (beta-lactams) for six weeks.

## Discussion

Acute sinusitis and/or periorbital cellulitis associated with intracranial complication is an emergency requiring neurosurgical and ENT team-work and liaison. Case series reviews have shown that subperiosteal abscesses located superiorly or supero-laterally within the orbit presented more frequently with significant frontal sinus disease [2]. Detailed CT/MRI scanning of brain and paranasal sinuses is crucial for diagnosis and follow up on progress. *Streptococcus milleri* (anginosus) is notorious for causing intracranial suppuration [3]. Watchfulness is mandatory in these cases because they can deteriorate quickly. Initial management of periorbital cellulitis without neurological and visual involvement should consist of intravenous antibiotic treatment, topical nasal steroids and decongestant drops. Response to antibiotic treatment is varied with case series showing between 44% [4] to 83% [5] response. When there has been no improvement within 48 hours of intravenous treatment or there is objective evidence of loss of visual acuity (under 8/10), a contrast-enhanced paranasal sinus computerized tomography (CT) scan can detect the extent of the infection [6]. If possible, this CT scan should be done under anaesthetic with a view of moving to the operating room to proceed with surgical drainage if required [7]. In our reporting case, there were no signs of direct paranasal spread or involvement of bony structures. This suggested spread via emissary veins, hence the decision to treat by intravenous antibiotics rather than surgery.



**Figure 1.** CT coronal showing Rt frontal epidural empyema and MRI Axial section showing enhancement of meninges

**Declaration:** We have no financial links in relation to this article submission. Hospital formal signed consent was obtained from the parent. We are not showing any identifiable picture of the child.

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