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Acute Ethmoiditis Complicated by Retro-Ocular Abscess in a Child

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Abstract **Case Report**

Summary Complications of sinusitis are mainly secondary to ethmoidal and frontal sinusitis. They are favored by immunodepression and anatomical anomalies that connect the endocranium or orbit to the sinus cavities. The seriousness of the condition lies in the risk of infection spreading to the endocranium and orbital cavities. The diagnosis should be systematically evoked in the event of treatment-resistant symptoms and the appearance of orbital or neurological signs. CT and MRI scans help to orient the diagnosis and assess the extent of the lesion. Treatment is based on prolonged antibiotic therapy and surgical management as part of a multidisciplinary approach involving ENT, ophthalmology, neurosurgery and intensive care.

Keywords: Sinusitis, Orbita, L Cellulitis, Complication.

INTRODUCTION

Sinusitis is said to be complicated when the infectious process extends beyond the sinus cavities. Complications are mainly secondary to ethmoidal and frontal sinusitis, and may affect the orbit or endocranium. They can be life- or function-threatening (1-3). We report a case of sinusitis complicated by orbital cellulitis.

OBSERVATION

A 14-year-old male with no previous history was admitted to the emergency department for headache and left orbital pain in a febrile setting 72 hours previously. His left eye showed axial exophthalmos, visual acuity 10/10 P2, painful inflammatory palpebral tumefaction with ptosis (Figure 1), conjunctival hyperemia, preserved ocular motility, anterior segment without any particularity, intraocular pressure 18 mmHg. The fundus was unremarkable. The Goldmann visual field was normal. Endonasal examination revealed congestive mucosa with purulence in the left middle meat.

WBC was 18,000 G/L and CRP 53mg/L. The patient had been treated for 24 h with ibuprofen and amoxicillin + clavulanic acid. The initial sinus CT scan (Fig. 2) revealed a left ethmoidomaxillary opacity with Chandler stage 2 orbital cellulitis.

Figure 1: Image of a patient with a left orbital swelling

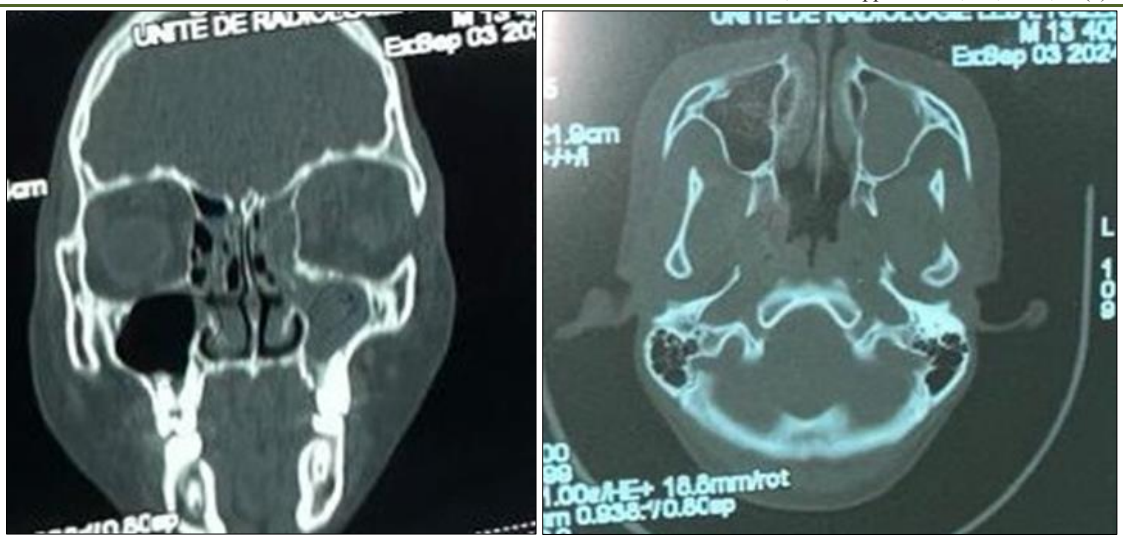

Figure 2: Nasosinus CT scan of a left Chandler stage 2 retroseptal cellulitis with type II exophthalmos associated with homolateral acute maxillo-ethmoidal sinusitis.

Intravenous bi-antibiotherapy combining Ceftriaxone (1gr × 2/d), and Metronidazole (500 mg × 3/d) was started. An endonasal-assisted midline meatotomy and left ethmoidectomy were performed for decompression. A significant amount of pus was drained from the sinus cavities and a swab was taken. There was no evidence of invasion of the papyraceous lamina. In agreement with the ophthalmology team, in view of the risk of the external route, medical treatment was chosen.

Samples were taken and found to contain multisensitive Streptococcus constellatus. The patient was monitored clinically and radiologically, and progressed favorably within 10 days, with complete resolution of symptoms. Further outpatient treatment consisted of amoxicillin + clavulanic acid for 15 days, combined with tapering corticosteroids over 4 weeks. Long-term ophthalmological and ENT follow-up was normal.

DISCUSSION

Orbital complications are the most frequent. The seriousness of these infections lies in the risk of blindness due to damage to the optic nerve. Clinically, a distinction is made between reactive inflammation, mucocele and infection.

Reactive inflammatory conditions include conjunctivitis, keratitis, uveitis and scleritis, and sometimes oculomotor myositis. Mucocele externalized towards the orbit is a retention of mucus in the sinus cavity as a result of a chronic sinus inflammatory process or traumatic sequelae, particularly surgery. The mucocelic formation erodes the bone walls and pushes back the orbital contents, resulting in diplopia, exophthalmos and ptosis.

Progression takes the form of inflammatory flare-ups, with superinfection of the mucocelic contents and sometimes rupture, leading to orbital cellulitis or skin fistulization. Treatment is surgical, involving endonasal "marsupialization" of the retention pocket. Infectious complications are represented by orbital cellulitis, septic inflammatory disease caused by neighbouring dissemination. Diagnosis is based on imaging, notably CT scans.

Oculo-orbital infections occur mainly in children [4]. The prognosis is functional or even vital [5]. As abscesses are most frequently found against the papyraceous lamina in the medial part of the orbit, endonasal drainage has been developed in recent years [6]. Management is based on Chandler's CT classification [7], which describes 5 stages:

- Stage 1: preseptal cellulitis; or palpebral cellulitis, begins with palpebral edema with no visual impact. Progress is generally favorable with appropriate antibiotic therapy.
- Stage 2: postseptal cellulitis; represents diffuse inflammation of the orbit, with pain, axial exophthalmos and chemosis, with no visual repercussions. The evolution may be favorable with appropriate antibiotic therapy and possibly decompression surgery.
- Stage 3: subperiosteal abscess; accompanied by non-axial exophthalmos of the globe towards the side opposite the lesion (figure 2). Pain is localized, and the picture evolves towards oculomotricity disorders, or even a drop in visual acuity. Drainage is clearly indicated.
- Stage 4: orbital abscess; includes the inflammatory signs of the previous groups, associated with ophthalmoplegia and reduced visual acuity of multifactorial origin (intraocular pressure, reduced venous return, neuritis, traction on the optic nerve). The visual

prognosis is compromised despite emergency medical and surgical treatment.

- Stage 5: cavernous sinus thrombosis. is central nervous system involvement manifested by neurological signs in a febrile context (the cavernous sinuses communicate anteriorly with the orbit via the superior and inferior orbital fissures. They are crossed by an arterio-nerve bundle containing the internal carotid artery, the oculomotor nerves and the sensory branches of the cranial trigeminal nerve).

Clinically, the orbital signs become bilateral: ophthalmoplegia, mydriasis, abolition of direct and consensual photomotor reflexes and reduced visual acuity. Treatment, carried out in intensive care, combines antibiotic therapy, corticosteroid therapy, anticoagulation and surgical treatment. CT and MRI scans are used to detect abscesses and osteitis, and to assess the extent of cavernous sinus involvement, which determines the medical and surgical management [2-8].

Endocranial complications include osteomyelitis, meningitis, extra- and subdural empyema and brain abscess. Febrile headaches associated with disturbances of consciousness, focal neurological signs, signs of intracranial hypertension, comititude or meningeal syndrome should raise the suspicion and lead to brain imaging. Treatment is based on surgical sinus drainage of the portal of entry and prolonged antibiotic therapy (6 weeks, up to 3 months for extensive osteitis), or even drainage of associated intracranial collections. Our patient had no neurological or endocranial complications.

Conflicts of Interest: The authors declare that they have no conflicts of interest in relation to this article.

CONCLUSION

Acute externalized ethmoiditis is essentially diagnosed clinically. Blood cultures and tests for soluble antigens can sometimes identify the causative organism. In general, however, these tests are negative, and parenteral antibiotic treatment remains probabilistic. It is important to monitor the child closely from the outset, to detect any orbital or endocranial complications requiring specific treatment. Imaging, and more specifically CT scans, should be requested whenever there is the slightest clinical doubt as to the existence or otherwise of such complications, which may justify surgical treatment.

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