Neuro-ophthalmic complications of acute paranasal sinusitis a surgical emergency

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ABSTRACT

Neuro-ophthalmic complications of acute infective sinusitis are a therapeutic emergency. It can lead to blindness or even death. We report a series of four cases of paranasal sinusitis who presented with unilateral sudden loss of vision. There were four patients in age group of 24 years to 65 years with mean age of 43.3 years. The four cases were of acute bacterial sinusitis. Staphylococcus aureus was isolated in three patients with bacterial sinusitis. All patients required an emergency sinus surgery to prevent permanent visual loss.

KEY WORDS : Paranasal sinusitis, Visual loss, orbital cellulites, intracranial complications.

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Introduction

Para nasal sinuses surround the nasal cavity and extend superiorly to the skull base and laterally encompasses the medial wall and floor of the orbit.[1] Inflammation of these sinuses remains one of the most common medical problem. An infection in the sinus can easily spread to the orbit or to the intracranial cavity as these anatomical structures are so closely interrelated. The incidence of morbidity and mortality among patients with complications of sinusitis has been reported in the range from 5% to 40%.[2,3] With the advent of newer antibiotics, better imaging modalities and advancement of surgical techniques, the incidence of intra as well as extra cranial complications have steadily decreased.[4,5] This article describes a series of four cases of acute infective sinusitis with neuro-ophthalmic complications and the role of emergency surgical management.

Methods

A series of four cases of acute infective sinusitis presented with orbital as well as intracranial complications in a period of two years at a tertiary care hospital. The patients were in age group of 24 years to 65 years with mean age of 43.3 years. The presenting symptoms were unilateral visual loss with proptosis in patients and ptosis with external ophthalmoplegia involving II, III, IV and VI nerves in two patients. Both these patients with ophthalmoplegia were also diabetic for 15 years and their sugar levels were very high at the time of presentation.

Computed tomography and Magnetic resonance imaging (CT and MRI) showed involvement of multiple sinuses in all patients with signs of orbital cellulites with optic neuritis in first four patients (Fig-1&2). In both diabetic patients there was evidence of spread of infection to superior orbital fissure and brain tissue as well (Fig-3).

An emergency functional endoscopic sinus surgery was done in all patients. The material obtained was sent for microbiological workup. Staphylococcus aureus was cultured in three patients whereas in one patient culture was negative. In both diabetic patients dense cottony fluffy growth was observed on Sabouraud's dextrose agar. Both these patients required

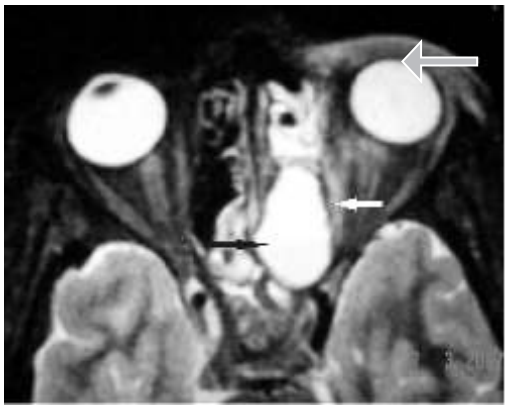

Figure 1 : MRI axial image showing distended left ethamoid sinus (black arrow), Inflammatory changes involving extra ocular muscles and orbital tissue (white arrow) with preseptal soft tissue inflammation (gray arrow).

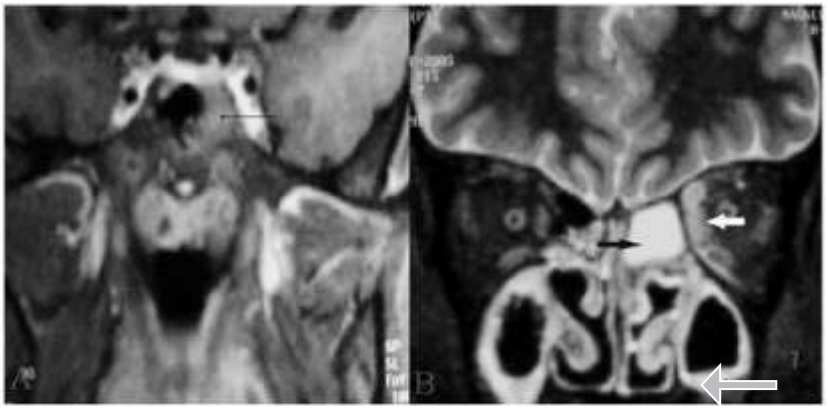

Figure 2 : MRI coronal image showing, A- Opaque sphenoid sinus (black arrow). B-Opaque ethamoid sinus (black arrow), mucosal thickening in maxillary sinuses (gray arrow) with inflammatory changes in adjacent orbital tissue involving rectus muscles and orbital tissue (white arrow).

Figure 3 : CT Scan axial image showing right ethamoid sinusitis with inflammatory changes involving medial rectus muscle, orbital tissue, optic nerve and orbital apex in mucormycosis

repeated radical debridement of sinuses. They were put on injection Amphotericin -B (1mg /kg/day) I/V for one week and later dosage was reduced to 25mg/day on alternate days. Hematological and renal profile were monitored

Results

Out of four patients with bacterial sinusitis, one patient developed partial optic atrophy in the affected eye due to delay in diagnosis and treatment. This patient presented after two weeks of visual loss. Remaining three patients presented within 24 hours to 48 hours. Endoscopic sinus surgery was done on urgent basis. They had complete visual recovery in four to six weeks time.

Discussion

An infection from sinuses can easily spread to the orbit or to the intracranial cavity as these structures are very closely interrelated. Infection can spread directly through any bony dehiscence or indirectly through valveless venous plexus surrounding the orbit and the sinuses[6]. The most common complication in sinusitis is orbital cellulites followed by intracranial complications that include meningitis, sub dural emphysema, intracranial abscess, epidural abscess and rarely, cavernous sinus thrombosis. Other complications are mucocele, pyocele, osteomylities, facial cellulites and sub periosteal abscess. [4, 7]

Various therapeutic measures include intravenous antibiotics or antifungal drugs, endoscopic and / or external drainage of affected sinuses and drainage of intracranial abscess.

Despite antibiotic therapy, there was a high incidence of morbidity and mortality in patients with intracranial complications ranging from 3.7% to 11% in previous studies. [4, 8, 9] Ali *et al.* in his series of 13 cases with complications of infective sinusitis treated 84.6% patients surgically. [10]

In our series, all patients underwent emergency sinus surgery. Three patients (50%) with bacterial sinusitis had complete recovery. Vision improved to 20/20 in the affected eye. Fourth patient presented very late .Optic atrophy had already set in, there fore vision improved to only 20/60 in the affected eye.

In conclusion, the neuro-ophthalmic complications of acute sinusitis are a therapeutic challenge. As they are potentially life threatening, immediate intervention is required. Broad spectrum antibiotics and emergency surgical drainage of affected sinus and the abscess (orbital and intracranial) form the mainstay of treatment.

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