The Journal of Emergency Medicine, Vol. 47, No. 3, pp. 282–285, 2014

0736-4679/$ - see front matter

ELSEVIER

http://dx.doi.org/10.1016/j.jemermed.2014.01.036

Clinical Communications: Pediatrics

ORBITOCRANIAL COMPLICATIONS OF ACUTE SINUSITIS IN CHILDREN

Pradeep Kumar Sharma, MD, Bhaskar Saikia, MD, and Rachna Sharma, MD

Pediatric Intensive Care Unit, B L Kapur Super Specialty Hospital, New Delhi, India
Reprint Address: Pradeep Kumar Sharma, MD, Pediatric Intensive Care Unit, B L Kapur Super Specialty Hospital, Flat no 48, Pocket 7, Sector 21, Rohini, New Delhi 110086, India

□ **Abstract—Background: Orbitocranial complications (OCCs) of sinusitis are uncommon but potentially life threatening. OCCs carry high morbidity, mortality, and significant long-term sequelae. Late recognition leads to even worse outcomes. Objective: To present four case reports showing that aggressive management of complications of sinusitis-like OCC decreases long-term sequelae and mortality in pediatric patients. Case Reports: Four pediatric patients diagnosed with OCC were treated at our institution from April 2012 to March 2013. Three were boys and one was a girl; ages ranged from 4–14 years. Magnetic resonance imaging and computed tomography were the most useful imaging modalities. All patients received broad-spectrum antibiotics. Additional interventions consisted of endoscopic sinus surgery, subdural empyema drainage, and orbital decompression. Conclusion: The difficult complications of acute sinusitis in the pediatric age group should be anticipated, recognized early, and aggressively managed to prevent morbidity and a fatal outcome.** © 2014 Elsevier Inc.

□ **Keywords—orbitocranial complications (OCC); sinusitis; early recognition**

INTRODUCTION

Sinusitis accounts for 21% of antibiotic prescriptions in the pediatric population (1). Sinus infection can spread to involve orbital and intracranial structures through either direct, hematogenous, or by retrograde extension, along the valve-less diploic veins. Orbital complications are observed more in younger children, whereas intracranial complications occur preferentially in older children (2,3). Boys are predominantly affected (2,3). We report four cases of pediatric orbitocranial complications (OCC): one had subdural empyema, two had orbital involvement, and one had both intracranial and orbital involvement.

CASE REPORTS

Case 1

A 9-year-old boy presented with fever, headache, vomiting, and seizure. On arrival, the child was drowsy (Glasgow Coma Scale score of 15), febrile (38.9°C/102°F), had photophobia and brisk reflexes with no meningeal signs. The illness began 18 days prior with fever and headache, and he was taken to his primary physician on day 6. The white blood cell (WBC) count was 14,190 with 79% polymorphs. He was started on amoxicillin-clavulanate. The symptoms persisted and the child was referred for magnetic resonance imaging (MRI) by a neurologist on day 10. The MRI of the brain revealed bilateral sphenoidal and left ethmoidal sinusitis. The antibiotic was changed to cefaclor by an otolaryngologist. Over the next 3 days, partial symptomatic improvement was seen, however, high-grade fever, headache, and vomiting recurred. The antibiotic was stopped at 48 h and a plan was made for further investigations. The child had seizures and was admitted on day 18. Investigations revealed WBC count of 26,000 with 89% polymorphs,

RECEIVED: 3 May 2013; FINAL SUBMISSION RECEIVED: 11 December 2013;
ACCEPTED: 30 January 2014

C-reactive protein (CRP) 152 mg/L, erythrocyte sedimentation rate 110, and sodium 127 mEq/L. A brain MRI scan was suggestive of sphenoidal sinusitis, left-sided cavernous sinus thrombophlebitis, narrowing of the internal carotid artery, and subdural empyema (Figure 1A, B). Cerebrospinal fluid analysis showed 20 cells with 90% polymorphs; biochemistry and culture were normal. The patient was managed with ceftriaxone, vancomycin, metronidazole, endoscopic sinus surgery (ESS), intracranial decompression, and supportive measures. Antibiotics were given for a total of 6 weeks. The child was discharged on an anticonvulsant. Follow-up MRI after 4 weeks was normal.

Case 2

A 13-year-old, type I diabetic boy presented to an outlying hospital with complaints of headache and vomiting for the past 15 days, and proptosis of the right eye for the previous 3 days. Brain MRI and paranasal sinuses (PNS) computed tomography (CT) revealed pansinusitis, right cavernous sinus thrombosis, and optic nerve and medial rectus inflammatory edema. The child was managed conservatively for diabetic ketoacidosis with the addition of ceftriaxone and vancomycin. Voriconazole was added on the 7th day. He was referred to our center on day 12 in light of persistent proptosis and ophthalmoplegia.

On admission, the patient had right proptosis, complete right ophthalmoplegia, and no perception of light. Blood sugar was 248 mg/dL. Investigation revealed WBC 9800 with 60% polymorphs and CRP 60 mg/L. MRI of the brain and CT of the PNS revealed pansinusitis, most pronounced on the right side, right cavernous sinus thrombophlebitis, optic neuritis, and orbital myositis (Figure 1C, D). Ceftriaxone, vancomycin, metronidazole, and amphotericin B were started. High-dose methylprednisolone was given for the optic neuritis and the patient underwent ESS on day 2. Perception of light and hand movement was noticed after 2 days of treatment. A histopathology sample showed the presence of zygomycoses with vascular invasion. He underwent repeat ESS after 2 weeks. Amphotericin B was given for 6 weeks. After 8 weeks of follow-up, the eye

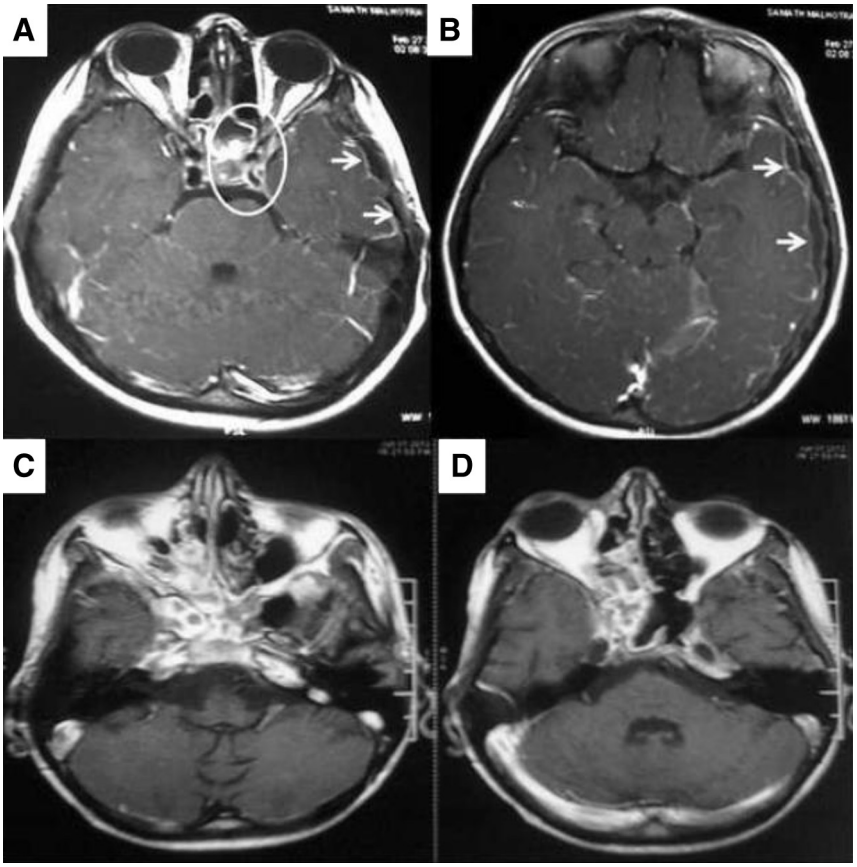

Figure 1. (A, B) Case 1: Shows sphenoid sinusitis, left cavernous sinus thrombophlebitis, narrowing of left internal carotid artery (encircled), and subdural empyema (arrows). (C, D) Case 2: Shows bilateral sphenoid sinusitis, right orbital cellulitis, optic neuritis, and cavernous sinus thrombophlebitis.