Case report

Postoperative orbital fluid accumulation masquerading as subperiosteal orbital abscess: A case report and literature review

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1. Introduction

Despite the availability of modern and powerful antibiotics, orbital complications of sinusitis are still major issues.1 cavernous sinus and intracranial infection have a high morbidity and mortality rate (10–20%).2 Most orbital complications of sinusitis, such as subperiosteal orbital abscess (SPA), could be diagnosed with computed tomography (CT) or magnetic resonance imaging scans.3 However, fluid collection, such as hematoma and edema, can also elevate the periosteum. This fluid collection might be misdiagnosed as SPA on a CT scan. In such cases, the fluid collection is usually resolved spontaneously. We herein report a case of a postoperative orbital fluid accumulation that masquerades SPA.

2. Case report

A 1.5-year-old boy suffered from left upper eyelid swelling, accompanied with fever, purulent rhinorrhea, poor activity, and poor appetite for 3 days. A CT scan showed opacity within the bilateral ethmoid sinus, and left maxillary sinus. There was also a well-defined infiltrative lesion in the superior nasal part of the orbit (Fig. 1). He was admitted to our department under the impression of orbital cellulitis with SPA, and was treated with amoxicillin/clavulanic acid (Augmentin) for 2 days. Unfortunately, his general condition worsened with upper eyelid ptosis. Thus, he received emergent endoscopic sinus surgery and external orbitotomy for decompression. A significant amount of fetid odor abscess was drained from the subperiosteal space.

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No microorganisms were cultured from this fluid. Fortunately, his condition improved after we changed the antibiotics to penicillin G and cefotaxime, based on previous culture results. Finally, the boy was discharged 3 weeks after admission (Fig. 2C).

3. Discussion

Pediatric SPA is an infectious process in which the abscess pocket is described as lying between the periorbital and the lamina papyracea. The source of the infection is believed to originate most frequently from the ethmoid and maxillary sinusitis, although vascular spread from the adjacent orbital, cranial, and facial structures is also possible. A pediatric SPA requires timely and effective treatment owing to its morbid complications, which include visual loss, endophthalmitis, cavernous sinus thrombosis, intracranial spread (e.g., meningitis, cerebritis, brain abscess), and ultimately death. Pediatric SPA can be treated conservatively or with surgical drainage. Age is a factor that is considered when taking a decision on whether a patient should undergo surgery or receive medical management alone for the treatment of SPA. Isolated medial or inferior SPA in children under the age of 6 and with underlying isolated ethmoid sinusitis, intact vision, and moderate proptosis is highly amenable to treatment with intravenous antibiotics. Indications for surgery are pansinusitis, large abscesses with significant mass effect, concurrent intracranial involvement, poor response to initial medical treatment, and the presence of an orbital abscess and gas. It has been previously reported that some of the SPA diagnosed by CT scans can be confused with other fluid collection conditions (e.g., hematoma, soft tissue edema, or periosteal elevation). The transnasal endoscopic (TNE) management of SPA has gained popularity in recent years. However, there are limitations in applying the TNE approach. Current reports show that the TNE approach is effective only in medial side SPA; but in nonmedial side SPA, an external approach should be combined. The TNE approach can be very difficult to perform in small infants, due to the underdevelopment of their sinuses. Therefore, it may be necessary to combine endoscopic sinus surgery and external drainage of SPA, as in our case. Because of the state of the immature sinuses, we performed an incision and drainage by TNE instead of sinus-wall destruction.

We report an uncommon case of SPA in a child, who required advanced treatment with surgical intervention. Based on the child’s activities and laboratory analysis results, we initially thought that...
the infectious swelling was completely cured with the antibiotics initially used. However, a new episode flared up promptly just before the patient was about to be discharged, and evidence strongly indicated the condition to be a recurrent SPA. Because of similar clinical presentations between the two episodes and critical condition of the child, we decided to perform the second external drainage immediately. Our findings showed that although SPA was highly suspected by CT scan, it still could be misdiagnosed from fluid accumulation. We believe that the possible etiology of the secondary subperiosteal fluid accumulation is the toxic effect of the previous infection.

The purpose of this report was to increase the awareness of the possibility of misdiagnosing postoperative fluid accumulation as SPA.

References