Cerebellopontine angle subdural empyema in a 2-years old patient with bilateral mastoiditis - a life-threatening condition. Case presentation and review of literature

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Abstract: Infratentorial subdural empyema is a life-threatening condition, the common source being an ear infection. We present a 2-year old boy treated for bilateral mastoiditis, with infratentorial- left cerebellopontine angle subdural empyema. Clinical presentation encompassed a systemic febrile illness, headaches, and a stiff neck. Empyema was diagnosed with computed tomography and magnetic resonance imaging. The patient was successfully treated with surgery and appropriate antibiotics. Empyema should be considered in patients with ENT infection associated with neurological signs that suggest a posterior fossa lesion.
Key words: Infratentorial subdural empyema, pediatric neurosurgery, outcome

Introduction

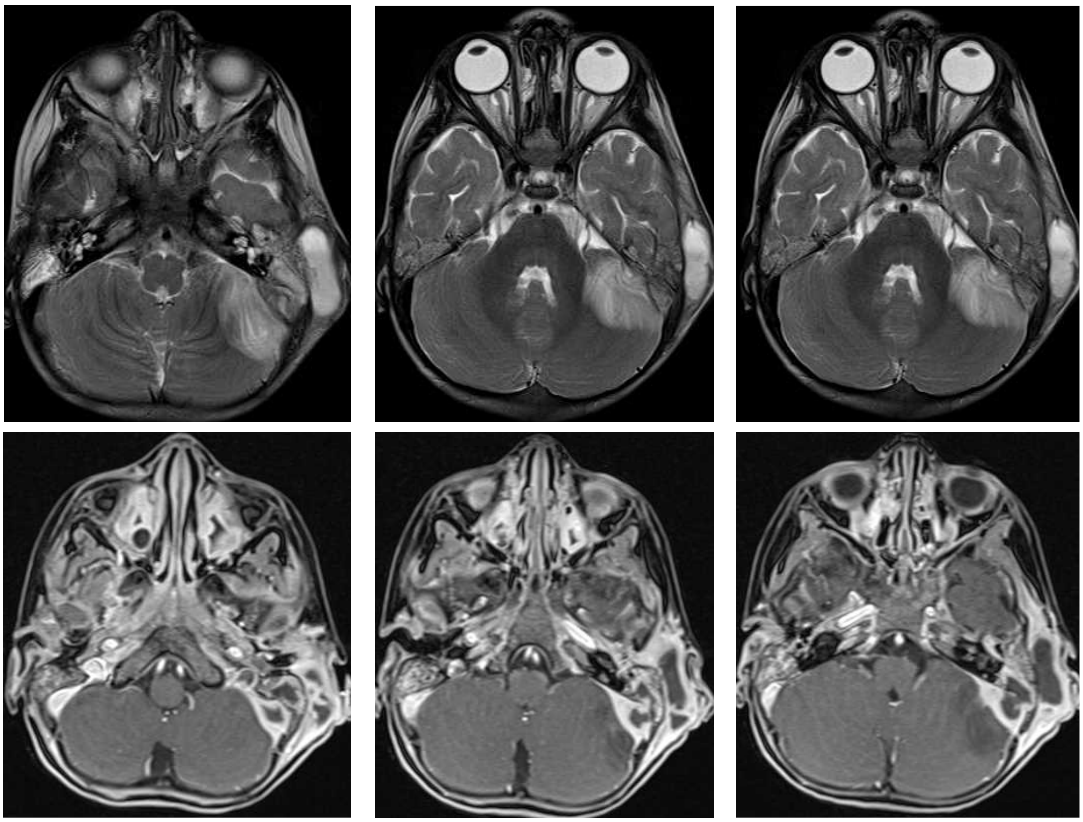
Subdural empyema is a rare infection of the central nervous system and most often is a secondary process to paranasal sinus infection, otitis or cranio cerebral trauma (4, 6, 8) It is a neurosurgical emergency and urgent surgical treatment is necessary in most cases. Location in the posterior cranial fossa in general and cerebellopontine angle is unusual. In this paper we present the case of a child aged 2 years with subdural empyema of left cerebellopontine angle, secondary to bilateral otomastoiditis. The patient was successfully treated by neurosurgical intervention and targeted antibiotic therapy. Although rare lesion empyema should be considered in patients presenting infection signs with ENT and neurological symptoms.

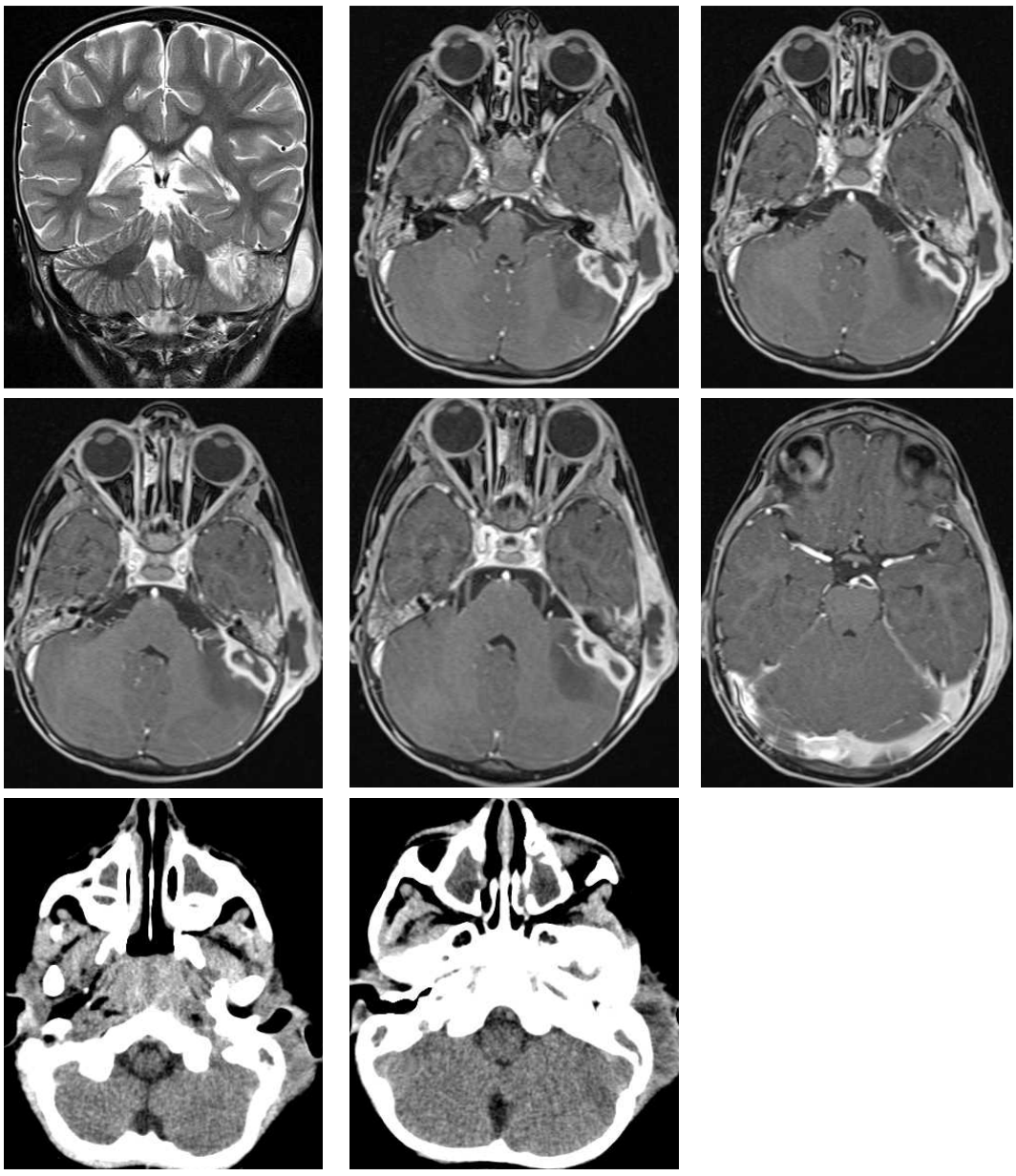
Case presentation

A 2-year old child is admitted with history of bilateral otitis, fever and occurrence of a left retro auricular pseudotumoral formation accompanied by celsian signs. This feverish patient is hospitalized with slightly weight deficit, neck stiffness increased intracranial pressure syndrome and balance disorders. In the service of infectious diseases where he was admitted previously, the patient received antibiotic treatment with Meronem 1.5 g / day, Vancomicin 600mg / day and 200mg Ciprofloxacin / day treatment continued

during the current hospitalization. CT scanning reveals bilateral otomastoiditis with parafluid retention in otomastoid cavities. Left cerebellar hemisphere heterogeneous densities adjacent to the temporal cliff and raise suspicion of left transverse sinus thrombosis. MRI examination performed shows osteomyelitis and left cerebellar hemisphere abscess with hyper T2 and important perilesional edema. The transverse and sigmoid sinus were thrombosed to the side in the jugular bulb. The analysis shows a slight blood neutrophils and increased ESR with leukopenia. Fundus examination was normal.

Surgery is performed by wide a left posterior cranial hemifosa craniectomy and an empyema of left cerebellopontine angle with multiple adhesion to the cerebellar hemisphere is drained. The thrombosis of and transverse and sigmoid sinus are confirm on the left. Pus is send for antibiogram analysis. Postoperatively the patient's evolution is favorable, it shows minor CSF leak which was treated by compression bandage. Antibiotic therapy was continued postoperatively. No pathogen was found. The patient was referred to the ENT service for mastoidectomy surgery. At 6 months postoperative the patient was fully recovered with no neurologica sign and the CT exam shows no relapse of infectious process.





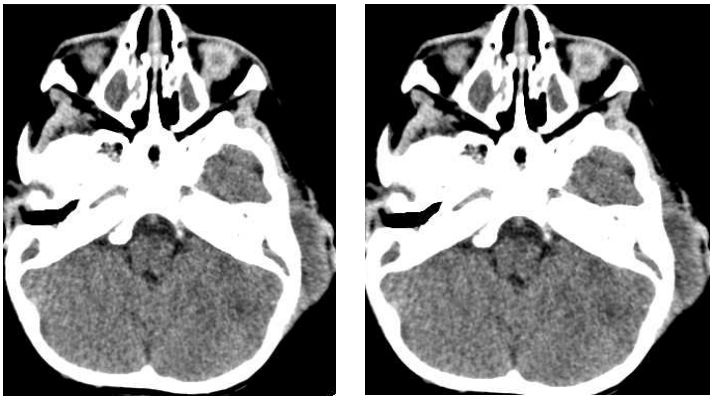
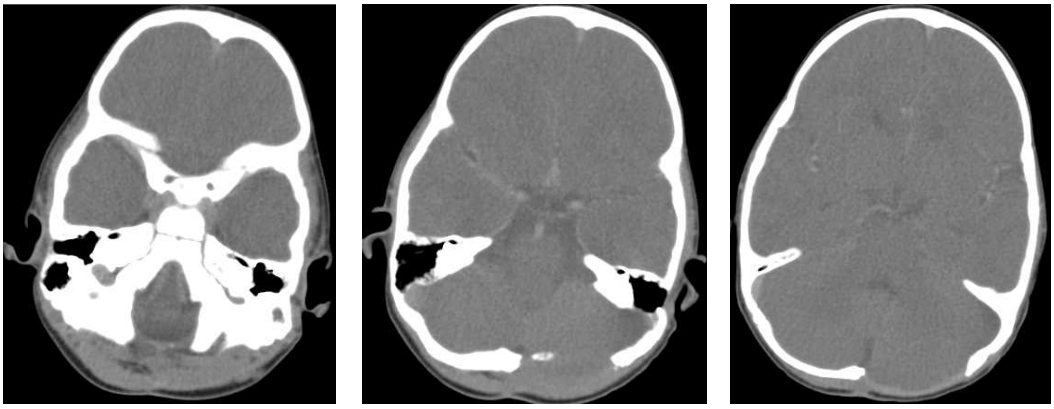
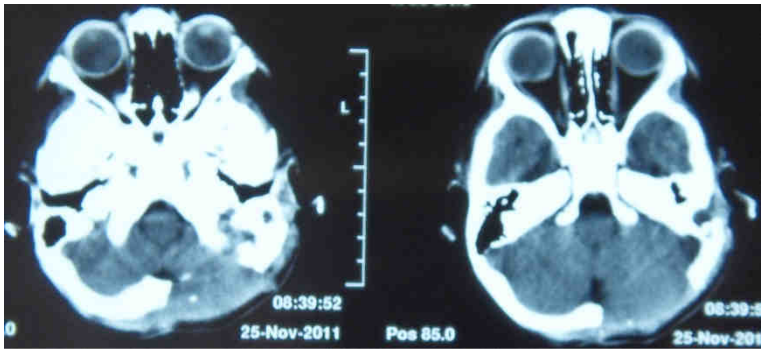


Figure 1 - Preoperative images: brain CT and brain MRI of the; cerebellopontine angle subdural empyema





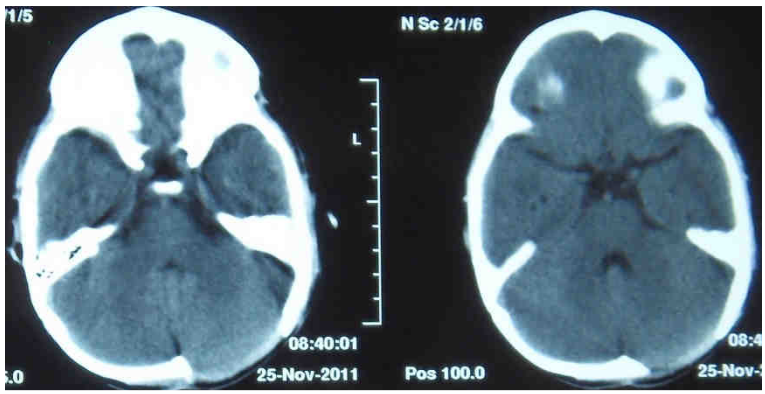


Figure 2 - Postoperative images after craniectomy and drainage of empyema

Discussion

The location of empyema in the posterior cranial fossa is rare (1, 2, 12) and are due in most cases of inappropriately treated recurrent otitis. Subdural empyema is according to data from the literature (5, 9) between 10 and 41% of all cases of intracerebral pus collections and infratentorial cases represent approximately 0.6% of all intracranial abscesses. (7) Pediatric cases of infratentorial subdural empyema SDE - are rare and are associated with increased morbidity and mortality.

Subdural empyema is a neurosurgical emergency requiring emergency evacuation of pus collections. Infratentorial SDE cases are briefly mentioned and represents a small number of cases (33 cases described in the literature). (3, 10)

In infratentorial subdural empyema patient's condition deteriorates rapidly and often irreversible, so early diagnosis and prompt treatment are necessary. The most common clinical symptoms are headache, fever, vomiting, meningism and otorrhea. The cerebellar symptoms or cranial nerve deficits are most often absent. Only approximately 21% of patients are presenting cranial nerve or cerebellar signs (1), that shows the importance of maintaining a high rate of suspicion of infratentorial subdural empyema in these patients, the diagnosis is not suggested by the clinical presentation in most cases. Subdural empyema associated with hydrocephalus incidence is reported between 77 and 93% in large series. Hydrocephalus benefit from external ventricular drainage in most cases, about 20% requiring a permanent drainage system. (8.12) Patient condition can rapidly deteriorate and duration of symptomatology is shorter than in supratentorial empyema. Brain MRI investigation remains preferentially in identifying and localization of subtentorial empyema due to lack of bones artefacts that can make detection difficult in CT scan examinations. Surgery is the primary treatment, we found only two cases in the literature that were treated exclusively antibiotic. We believe that antibiotics can only be an option in highly selected, special cases, due to the long treatment, the possibility of neurologic worsening and increased possibility of recurrence. Ideal is to perform mastoidectomy in the same time with de empyema evacuation, thereby eliminating the

source of infection and preventing recurrence. Maharaj & Singh (11) in their study on 268 patients with intracranial complications of media otitis concludes that radical mastoidectomy is required only in those patients presenting with coleastoma, for the rest partial mastoidectomy allowing hearing preservation is feasible.

Conclusions

Infratentorial subdural empyema should be taken in consideration in patients with bacterial meningitis or otogenic infections. Common clinical presentation includes fever, headache, increased intracranial pressure syndrome, meningism and otorrhea. In most cases there is a causal relationship with a chronic infection of the middle ear. Surgical evacuation with targeted antibiotics is the main line to follow. Although rare, infratentorial subdural empyema shows a high morbidity and mortality that can be lowered by access to neuroimaging investigations, specialized medical institutions and prompt surgical intervention. If prompt intervention and proper management of possible complications are performed good prognosis and outcome are expected.

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