Intracranial subdural empyema

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Subdural empyema in the intracranial space.

Epidemiology

Intracranial subdural empyema (SDE) accounts for 15–20% of all intracranial infections ¹⁾.

The majority are supratentorial in location, common in developing countries, especially in the pediatric age group.

Classification

Infratentorial Subdural empyema

Supratentorial subdural empyema

Case reports

An 81-year-old male, 48 days post-CSDH surgery, developed SE with Methicillin-resistant Staphylococcus aureus infection. The initial treatment with burr hole drainage was complicated by recurrence, leading to a second procedure with double tubes inserted anteriorly and posteriorly for continuous irrigation therapy. The patient was treated with systemic antibiotics and vancomycin irrigation, resulting in successful resolution without further recurrence.

Clinical discussion: While burr hole surgery is often deemed less effective than craniotomy for SE, this case demonstrates the potential efficacy of double-tube irrigation via burr hole surgery. This method could be especially beneficial when craniotomy poses significant risks. Continuous irrigation could help in managing intracranial pressure, making the intervention safer. However, further research is needed to refine this technique and establish clear treatment guidelines.

Conclusion: Burr hole surgery with double-tube irrigation emerges as a promising treatment option for SE, especially when craniotomy is not feasible. This approach's success in this case encourages further exploration and study to validate its wider application in similar clinical scenarios².

an eight-year-old male who presented with an acute onset of fever, severe headache, and vomiting following an upper respiratory tract infection. A physical examination revealed meningeal irritation signs, altered consciousness, and focal seizures. Laboratory results showed elevated inflammatory markers, and cerebrospinal fluid analysis indicated abnormalities. Initial imaging displayed sinus involvement, but the patient's condition deteriorated. Subsequent magnetic resonance imaging revealed subdural empyema and meningoencephalitis. Streptococcus pneumoniae was identified as the causative agent. Subsequently, tailored antibiotic therapy and urgent neurosurgical interventions were initiated. The patient recovered with the resolution of neurological deficits. This case underscores the complexity of pediatric bacterial meningitis and its potential complications, emphasizing the relationship between upper respiratory tract infections, sinus involvement, and meningitis development. A multidisciplinary approach, combining targeted antimicrobial therapy with neurosurgical intervention, proved crucial for optimal management and favorable outcomes. This detailed case report highlights the importance of early diagnosis and comprehensive management in pediatric bacterial meningitis cases³⁾

A patient with subdural empyema which resulted from sinusitis. The integral and first part of therapy was an urgent neurosurgical drainage of subdural empyema, followed by functional endoscopic sinus surgery performed by an ENT surgeon. Conservative treatment consisted of systemic antibiotics and antiedematous therapy. Later the patient developed post-infectious hydrocephalus, which was solved by the implantation of a ventriculoperitoneal shunt. Consequently, cranioplasty was performed. Despite the acute onset of the disease and severe neurologic deficit before the first neurosurgical intervention, the clinical condition of the patient is favorable after multiple surgeries. The patient can live independently without any significant limitations in everyday activities. The presenting symptoms of subdural empyema are reflective of increased intracranial pressure, meningeal irritation, and cerebritis. Radiographic imaging (contrast CT, DWI-MRI, contrast MRI) is an essential diagnostic tool. The integral part of therapy is a neurosurgical evacuation of subdural empyema combined with intravenous antibiotic therapy. Subdural empyema is a rare, rapidly progressing disease that is underestimated by physicians in many cases. Diagnosis is often delayed and therefore, despite recent progress in treatment, the mortality rate remains high ⁴.

A 12-year old child and a 2-month old infant developed, in the wane of a purulent meningitis, the former, an infratentorial subdural empyema, the latter, a large, encapsulated, haemoorhagic, aseptic subdural effusion, in the right parieto-temporo-occipital region. In both cases, signs of intracranial hypertension dominated the clinical picture. Neuroradiological investigations permitted diagnosis and localisation of the expansive processes, whose subdural position was recognized at operation and confirmed by histopathological examination. According to the literature, purulent meningitis is a rare cause of subdural empyema, except in infants; the solely infratentorial location is also unusual. Sterile subdural effusion is a more common complication of purulent meningitis in infancy, but the unilateral posterior supratentorial location is also a peculiar feature. Subdural collections after memingitis may be aseptic and possibly haemorrhagic, or septic and purulent; these different modes of presentation

correspond perhaps to different degrees or stages of subdural pathological changes in the neighbourhood of leptomeningeal infection $^{5)}$.

Case series

Intracranial subdural empyema case series.

1)

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Alosaimi H, Aljohani K, Alatawi T, Alghabban I, Alatawi F, Alduraibi A, Almithn D, Abdultawab A. Subdural Empyema in Pediatric Bacterial Meningitis: A Case Report. Cureus. 2023 Dec 31;15(12):e51401. doi: 10.7759/cureus.51401. PMID: 38292966; PMCID: PMC10826629.

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