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Educational Abstract

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Imaging Features of Massive Bilateral Subdural Empyema in a Child: Case Report and Literature Review

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A 17 month-old girl was admitted for prolonged fever and right hemiparesis. Initial contrast-enhanced brain MRI revealed massive bilateral subdural empyema as heterogeneous areas of low intensity T1WI and high intensity T2WI and FLAIR, compressing the brain parenchyma and causing subfalcine herniation to the right, along with evident hydrocephalus. Post contrast MRI showed enhancement in the wall of subdural empyema. Septations within the subdural collection were also noted. DWI and ADC maps showed focal areas of restricted diffusion within the subdural collection. Surgical drainage revealed purulent exudate, and Klebsiella pneumoniae was isolated from microbial culture. The patient underwent follow-up head CT, which showed progression of the empyema, regardless of treatments given. Craniotomy was done for further drainage along with subdural catheter placement. Several follow-up CT was done, which showed resolvement of the empyema. However, the hydrocephalus progressed, and areas of hypodense periventricular white-matter developed, findings consistent with periventricular leukomalacia. On further clinical follow-up, the patient eventually developed cerebral palsy.

Imaging is the key to the diagnosis of subdural fluid collection. Several imaging features, predominantly on MRI, can help differentiate the contents of subdural collection, such as empyema, hematoma, or hygroma, to assist diagnosis without waiting for pathological analysis, therefore advancing early treatment for the patient. The objective of this report is to describe a case of massive bilateral subdural empyema in a child and reviewed its key imaging features according to today's literatures, providing updated learning points on the crucial role of imaging in diagnosing subdural empyema and its complications.