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MR Imaging of Fatal Atlantoaxial Dislocation Caused by Retropharyngeal Abscess

We describe a case of an infant with a large retropharyngeal abscess who died during MR imaging as a result of atlantoaxial dislocation and cord compression caused by the inflammatory process.

Case Report

A 9-month-old girl was evaluated in our emergency room for 103°F fever and decreased activity. Three weeks earlier, at another hospital, the patient had been treated with antibiotics and skin grafting for second- and third-degree scald burns. On the current admission, a nonfluctuant neck swelling was noted, but otherwise the results of the physical and neurologic examinations were normal. WBC was 21,600/ μ l, and cultures of CSF and blood grew *Staphylococcus aureus*.

After admission, a gallium-67 citrate scan showed increased uptake of radionuclide in the cervical region, left shoulder, and right elbow, consistent with multifocal osteomyelitis. Routine cervical radiographs were not obtained. Emergency MR imaging of the head and upper cervical spine showed a large retropharyngeal soft-tissue mass consistent with an abscess (Fig. 1). The mass extended intracranially into the epidural space immediately anterior to the brainstem. Dislocation of the C1-C2 articulation and marked compression of the cervical spinal cord also were seen. During MR imaging, the patient suddenly stopped breathing and could not be resuscitated. Autopsy showed evidence of systemic *S. aureus* septicemia and of spinal cord compression associated with atlantoaxial subluxation caused by a large retropharyngeal abscess.

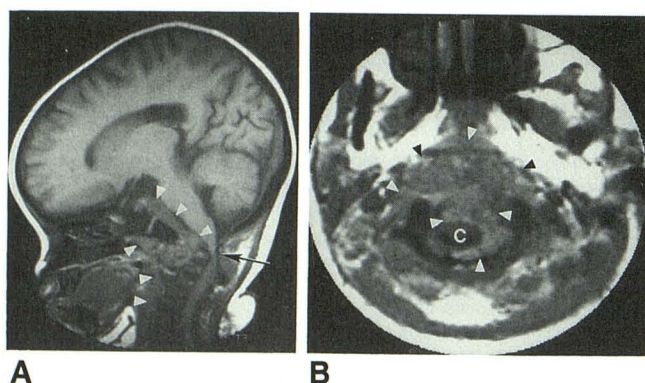


Fig. 1.—Atlantoaxial dislocation caused by retropharyngeal abscess.
A, Sagittal MR image, 500/20, shows large retropharyngeal abscess, atlantoaxial dislocation and cord compression (arrow), and epidural extension of abscess (arrowheads) along clivus.
B, Axial MR image shows abscess (arrowheads) extending posteriorly around spinal cord.

Discussion

Retropharyngeal abscess occurs most frequently in infancy; about 50 to 55% of cases reported are in children less than 1 year old [1, 2]. Infection in the retropharyngeal space usually is associated with a nasopharyngeal infection or penetrating trauma, but it may be the result of a blood-borne infection from a remote site. Staphylococci and β -hemolytic streptococci are the causative organisms most commonly isolated [1]. Known complications include meningitis, mediastinitis, abscess rupture with sepsis, and atlantoaxial subluxation [2]. Despite these potentially disastrous complications, the first clinical manifestations of retropharyngeal abscess may be subtle.

CT is useful for diagnosing a retropharyngeal abscess [3]. The use of MR imaging for determining the presence or extension of a retropharyngeal abscess has not been reported. Our case illustrates the expected appearance of a complicated retropharyngeal abscess on MR: a large soft-tissue mass with atlantoaxial subluxation and intracranial extension. If no clinical history is available, alternative diagnoses such as lymphoma and rhabdomyosarcoma would need to be considered also. Although our patient died before further pulse sequences were performed, we expected that the abscess would have high signal on T2-weighted images and would show vivid enhancement after injection of contrast material, similar to the appearance of other intracranial and intraspinal infective processes [4].

Atlantoaxial subluxation caused by a retropharyngeal abscess involves destruction or softening of atlantoaxial ligaments as a result of the inflammatory process [5]. Reactive muscular spasms in the neck also may contribute to dislocation or subluxation. The malalignment in the upper cervical vertebrae may disappear as the inflammatory process resolves. In our case, however, fatal atlantoaxial subluxation occurred before appropriate diagnosis and therapy. A high index of clinical suspicion clearly is needed by both the referring physician and the radiologist involved with such cases.

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