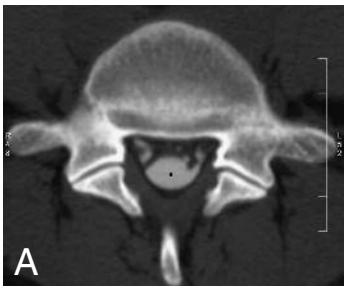
JBR–BTR, 2010, 93: 108.

IMAGES IN CLINICAL RADIOLOGY



Arachnoiditis ossificans

Ph. Bernard[1], F.M. Vanhoenacker[1,2], N. Adam[3]

An 18-year-old female underwent a CT scan and subsequently an MRI scan of the lumbar spine at our department because of chronic low back stiffness and pain, extending in the sacro-iliac and coccygeal regions. The patient had been involved in a car accident one year before. There was no history of previous surgery. CT revealed a spontaneous hyperdensity of the dural sac (Fig. A, black asterisk) and the nerve root sheaths L4 to S1. MRI showed signal loss on both T1- and T2-weighted images of the dural sac (Fig. B-C, white asterisks), and nerve roots suggesting calcification. Furthermore, a plate-like hypo-intense structure was visible at the posterior leptomeninges of the lower thoracic spine (Fig. B-C, white arrows). Treatment with physiotherapy and paralumbar infiltrations was performed resulting in clinical improvement after 6 months.

Comment

Arachnoiditis Ossificans (AO) is a rare type of chronic arachnoiditis characterised by the presence of calcification or ossification of the spinal arachnoid, due to proliferative metaplasia of the arachnoid closely enveloping the spinal cord and nerve roots. Although the process may either consist of calcifications or ossifications, the terms arachnoiditis ossificans and calcificans are often used interchangeably.

It usually affects the thoracic spine. Isolated involvement of the lumbar spine or cauda equina is very rare. Typically, the lesion extends over fewer than five vertebral levels, but extension over more than ten vertebral levels has been described.

Risk factors include previous spinal surgery or trauma, (chemical) meningitis, non-traumatic subarachnoidal hemorrhage, myelography with oil-based contrast agents and injection of intraspinal anesthetic agents. AO may also be idiopathic. In our patient, the previous car accident could be incriminated as potential causative factor.

Clinically, there is no distinct symptom complex, but AO is an important, often unrecognized, cause of failed back syndrome, sometimes leading to severe chronic disability and neurological deficit.

Plain film imaging is often insensitive for detection of subtle calcifications or ossifications. In extensive cases, radiography may show linear calcifications and ossifications within the spinal canal. On CT, typically hyperdense linear calcifications surrounding or in the dural sac and nerve roots are present. On MRI, these lesions appear usually hypointense on all pulse sequences. In later stage disease, the lesion may contain bone marrow, resulting in a predominant high signal intensity on T1-weighted images.

Treatment is controversial. Conservative pain management treatment is preferable. In case of progressive neurological deterioration, surgery such as laminectomy combined with dural enlargement and careful resection of soft tissue arachnoiditis to facilitate CSF flow is recommended. However, aggressive removal of periradicular ossification is contra-indicated, because the surgical procedure may cause neurological damage. Furthermore, surgery itself may aggravate the process of arachnoiditis.

1. Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Mechelen, 2. Department of Radiology, Antwerp University Hospital, Edegem, 3. Department of Physical Medicine, Sint-Augustinus Hospital Antwerp, Wilrijk, Belgium.