Case 1180

Retrodental pseudotumor in an elderly patient with os odontoideum
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Patient: 75 years, male

Clinical History:

An elderly patient, previously healthy, presented with high cervical myelopathy. MRI study of the cervical spine revealed a retrodental mass causing marked compression on the spinal cord.

Imaging Findings:

The patient presented with a 1-year history of progressive difficulty with walking. Several months before admission, he had noticed difficulty using his hands and he had experienced increasing weakness and a feeling of heaviness in both upper and lower extremities. His past history was unremarkable except for occasional neck and upper limb, non radiating, pain. He denied any history of trauma to the head or neck. Neurological examination disclosed weakness, remarked spasticity and hyperreflexia in both upper and lower limbs. No sensory deficits were found. Plain radiographs of the cervical spine (not shown) revealed spondylotic changes at the mid and lower level. The odontoid process could not be well delineated. MRI study was performed for further evaluation. The sagital images showed a hypoplastic dens and a separate ossicle, lying above it, consistent with os odontoideum. A midline soft tissue mass was noticed posterior to the odontoid remnant and body of the axis, causing marked compression on the spinal cord. The mass showed intermediate intensity on T1 images and markedly decreased signal on T2 images. Marginal linear enhancement was demonstrated on post contrast images. The rest of the cervical spine showed extensive degenerative disc disease changes. Following spiral CT examination of the cervical spine confirmed the presence of os odontoideum. The patient underwent transoral resection of the os odontoideum and the retrodental mass. Occipitocervical fixation was performed. On inspection the os odontoideum was firmly attached to the C1 arch. The alar ligaments could not be recognized and only remnants of the transverse ligament were found. The mass consisted of yellow, amorphous material. Pathologic examination disclosed acellular fibrous tissue with no evidence of inflammatory or neoplastic process. The diagnosis of pseudotumor at the craniocervical junction, associated with os odontoideum, was established.

Discussion:

Os odontoideum is a rare anomaly of the axis. It refers to a separate ossicle located in the normal position of the odontoid process or more cranially. The atlas and ossicle, which are held in place by the transverse ligament, are able to luxate on the axis, leading to atlantoaxial instability. Eventually, granulation tissue may build up around the defect acting as a mass. This lesion, also known, as pseudotumor has typical MRI features, that is, absence of contrast enhancement and marked hypointensity on T2 images. Both of them help to distinguish pseudotumors from neoplastic, periodontal lesions of the craniocervical junction, such as epidural metastasis, lymphoma or extradural...
meningioma. Retrodental pseudotumors have been described in several other conditions, mainly in inflammatory joint diseases. Retrodental pannus formation in rheumatoid arthritis is a well known entity. Moreover, these lesions have been considered to have degenerative origin in the absence of any congenital or inflammatory underlying disease. Sze et al described these lesions in elderly patients with chronic atlantoaxial subluxation, related to degenerative osteoarthritis. They attributed the process to a reparative soft tissue response to the chronic mechanical irritation. Crockard et al described these periodontal "pseudotumors" in elderly patients with advanced cervical spondylosis who did not demonstrate atlantoaxial instability. They speculated that these patients develop partial ligamentous tear or avulsion, probably of the transverse ligament, as a degenerative process. Attempted repair generates a progressively enlarging mass. Histological evidence of fragments of ligaments in the mass provided additional support to their theory. We described the MRI findings of a pseudotumor associated with os odontoideum. Radiologists should consider this diagnosis even in the absence of any congenital anomaly, in the appropriate clinical setting, that is, of an elderly patient, previously healthy, with high cervical myelopathy and a retrodental pseudotumor-like lesion.

**Differential Diagnosis List:** retrodental pseudotumor

**Final Diagnosis:** retrodental pseudotumor

**References:**


Description: The anterior arch of the C1 vertebra appears situated posterior in relation to the body of the axis. The os odontoideum is seen in the place of the dens, extending into the anterior rim of the foramen. The retrodental soft tissue mass shows marginal enhancement which probably represents displaced engorged venous plexus. Origin:
Figure 2

Description: The mass appears hypointense and the transverse ligament greatly attenuated. Spondylotic changes are also noted. Origin:
Figure 3

Description: The presence of os odontoideum is confirmed. Origin: