Calcification in a Cervical Intraspinal Neurilemmoma

C.T. Bonstelle and F.S. Vines

Department of Radiology, Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia, USA

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Summary. A case of cervical intraspinal neurilemmoma with radiologically demonstrable calcification is reported and the value of preoperative angiography is discussed.

Fallbeschreibung einer Kalzifizierung in einem zervikalen intraspinalen Neurolemmon

Zusammenfassung. Es wird ein Fall des zervikalen intraspinalen Neurolemmon mit Roentgen-sichtbaren Kalzifikationendargestellt, und der Wert der preoperativen Angiographie besprochen.

Gross and microscopic calcification in spinal cord tumors is rare. Such calcification has been reported in meningiomas, hemangioblastomas, vascular oligodendrogliomas and neurofibromas [6, 9]. Radiographic demonstration of calcification in spinal cord tumors is even more rare, and when present, usually indicates a meningioma [21]. It has been stated that calcification is not seen radiographically in spinal neurilemmomas [4, 14, 20]. The present report is of a radiographically well calcified spinal neurilemmoma.

Case Report

A 50 year old man was involved in an automobile accident in July 1971. The cervical spine films obtained at another hospital at that time revealed a lytic lesion in the midecervical region. The patient was, however, asymptomatic and remained asymptomatic until six months later, when he developed aching pain in the left posterior cervical region. He had no history of recent trauma or other precipitating cause. He was referred for further evaluation.

General physical examination was unremarkable, without evidence of cutaneous lesions. Examination of the neck revealed no masses and no areas of focal tenderness, with a normal range of motion. Neurological examination was normal. Radiological examination of the cervical spine revealed an erosive lesion involving the left intervertebral foramina of C4 through C6 with central calcification (Fig. 1a-c). Positive contrast cervical myelography revealed an extradural mass lesion with compression of the subarachnoid space and mild displacement of the cervical cord (Fig. 1d). Retrograde femoral selective vertebral angiography revealed displacement of the cervical portion of the left vertebral artery with a single abnormal vessel extending into the tumor bed (Fig. 1).

Bilateral laminectomy from C3 to C6 revealed marked thinning of the left lamina. An extradural tumor was seen extending from the lower portion of C3 to the upper portion of C6 on the left. It was firmly adherent to the dura and extended out to involve the articular pillars of C4 and C5. Nerve roots in this area were seen to pass through the tumor mass. Intracapsular removal of the tumor was accomplished, followed by dissection and removal of the capsule where possible. No intradural tumor was found after opening the dura.

At pathological examination the tumor revealed areas of gross calcification. Microscopically the tissue consisted of palisading spindle cells. Moderate fibrosis was seen between the palisaded cells with nerve and ganglion cells in some sections. An area of necrotic material revealed partial calcification. The cell type and arrangement were typical of a neurilemmoma, predominantly of Antoni types A and B tissue.

Postoperatively the patient demonstrated very weak biceps, brachioradialis, and deltoids bilaterally.
Fig. 1. Frontal (a), oblique (b), and frontal tomographic (c) views reveal a $2 \times 3.5$ cm erosive lesion involving the left intervertebral foramina of C4 through C6, with destruction of the pedicle of C5 and undercutting of the articular pillars. Well defined calcification is present centrally in the area of bone destruction, (d) cervical myelogram reveals an extradural lesion with compression of the subarachnoid space and mild displacement of the cervical spinal cord.

with electromyographic evidence of denervation. Following physical and occupational therapy, there has been partial return of function.

**Discussion**

The radiographic diagnosis of neoplasms of the spinal canal remains quite limited. Placement of the mass in the intra- or extradural compartments is usually reasonably simple, but there are few other definitive diagnostic features. The presence of radiographically demonstrable calcification in an extradural mass usually indicates a meningioma. It has, in fact, been stated that calcification does not occur in spinal neurilemmomas [4, 14, 20]. Hannon reported rare instances of gross calcification in spinal cord tumors, particularly in meningiomas, angioblastomas, and vascular oligodendrogliomas, without radiographic evidence of calcification [5].

Although neuropathologists now feel that