Pitfalls in computed tomography of the cervical and lumbar spine

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Abstract

In 10 patients, evaluated by computed tomography studies of the spine, radiological findings alone may have led to misinterpretation of the clinical condition. Five patients demonstrated CT findings of cervical disc herniation or protrusion, while clinical examination resulted in the diagnosis of neuralgic amyotrophy. In contrast, 3 patients with clinical signs of compression of lumbar nerve roots had negative findings in CT studies of the lumbar discs. Additional slices at the level of the vertebral body, however, demonstrated free sequestration of disc substance. Two patients with signs of compression of cervical roots had normal CT findings, but extensive disc herniation was present at surgery.

Keywords: Computed tomography, disc herniation, neuralgic amyotrophy, spine.

1 Introduction

Computed tomography of the spine has brought a considerable improvement in diagnosis of herniation of intervertebral discs, and has replaced myelography as the initial diagnostic method of this condition, since the accuracy of the two procedures is comparable [1, 7, 8, 11, 12, 13, 20, 21, 22, 26]. High quality studies with 1 mm and 2 mm slices of the cervical and 2 mm slices of the lumbar regions are a prerequisite for diagnosis, eliminating potential sources of error such as motion artefacts, scoliosis and spondylolisthesis. However, considerable improvement in diagnosis with CT has not ruled out the possibility of false interpretations and errors in individual cases [6, 24]. We report on 10 patients with CT findings resulting in diagnoses which proved to be wrong.

2 Patients and methods

Five patients ranging in age from 45 to 51 years were admitted to hospital with the tentative diagnosis of cervical disc herniation. Weakness was detected in a variety of patterns in the muscles served by nerves at the C 5 to C 8 level (Table I). Conventional radiological studies of the cervical spine in four projections and CT studies were performed in all patients, one patient underwent additional myelography (Table II). Degenerative changes in the cervical spine were found in all patients, though the radiological findings did not concur with the neurological deficit. Radiological evidence of disc prolapse was demonstrated un-equivocally in three patients and disc protrusion was found in two others.

Case no. 1 suffered acute onset of severe pain in the left shoulder and upper arm two weeks before admission lasting three days. After resolution of pain, weakness of the left deltoid and biceps muscle was found in clinical examination. The left biceps tendon reflex was absent, but no sensory loss was noted. CT studies demonstrated a left medio-lateral disc prolapse with evidence of calcification at the C 5/C 6 level. Myelography documented a contrast defect at the same level.

Clinical demonstration of severe weakness and radiological findings resulted in a decision for surgical intervention, though weakness of the deltoid muscle was not satisfactorily explained by disc prolapse at the C 5/C 6 level. In the postoperative period a progression of weakness of the biceps muscle and additional motor loss of the infraspinatus and supraspinatus muscles with ac-
comparing atrophy was observed. Weakness resolved spontaneously within one year.

Case no. 2 also complained of severe pain accompanied by severe weakness of the right deltoid and biceps muscle which resulted in virtual loss of abduction and elevation of the right arm. Extensive cervical disc prolapse was demonstrated on the left side at the C 4/C 5 level. Weakness resolved spontaneously within two months, and the patient was able to resume his work as a furniture mover.

Similar symptoms were noted in cases 3, 4 and 5. All patients complained of sudden onset of pain in the shoulder and proximal arm with sub-