POST TRAUMATIC PSEUDOMENINGOCELE

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Introduction

A case of traumatic avulsion of the brachial plexus presenting as multiple cervical pseudomeningoceles following a fall from bicycle is presented. Two wheeler accidents may result in severe distraction of arm with dural tears. Overall they are rare causes of nerve root or spinal trauma.

Case Report

A 15-year-old boy presented with complaints of persistent loss of movement of right shoulder and right upper limb associated with loss of sensation along lateral aspect of upper arm and distal to the elbow following a fall from a bicycle 2 months ago. He had also fractured the olecranon process and the medial condyle of right side ulna and humerus respectively. These injuries were managed conservatively.

On examination he had grade o/V power in muscle groups of the right shoulder with wasting of the supraspinatus, infraspinatus and deltoid, and winging of the right scapula. He had loss of sensation over C5-7 dermatomes. He was provisionally diagnosed as having right brachial plexus injury.

Fig. 1: CTM reveals anteroposterior compression fracture of body of C7 vertebra with pseudomeningocele (arrows) at C7-T1 level.

Routine investigations were within normal limits. Myelogram revealed no obstruction to the flow of contrast in the spinal subarachnoid space. A bulbous outpouching was seen emerging from the right sided neural foramen C5-6 in both frontal and lateral projections. This was followed by computed tomomylography (CTM) of the cervical spine from C2 to T1 levels with 5 mm sections at vertebral body level and 1 mm sections at disc level. The study revealed anteroposterior compression fracture of the body of C7 with a chip fragment lying on the right side.

There was a tear of right root sleeve at C7-T1 disc level resulting in formation of a post traumatic pseudomeningocele extending over a length of 1.85 cm having a width of .45cm (Fig 1). There was also pressure effect on right anterolateral aspect of thecal sac at this level. There was another root sleeve tear at the level of C5-6 with a relatively smaller pseudomeningocele protruding from the right neural foramen (Fig 2).

Discussion

Avulsion injuries of the brachial plexus result in contusion or transection of a nerve root generally at its attachment to the spinal cord. These injuries are as a

Fig. 2: CTM reveals pseudomeningocele (arrows) from tear of dura as a result of avulsion injury at C5-6 level

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result of stretching of nerve root beyond its endurance [1] in motorcycle and bicycle accident. These injuries are because of distracting forces tearing the arachnoid and dural sheath of the nerve root, allowing leakage of CSF both along the course of the torn nerve root and along the epidural space [2,3]. They may or may not be associated with osseous spinal injury. They often involve the lower cervical region.

Nerve root avulsion injuries with dural tears are best evaluated by conventional myelography followed by CTM. On myelography the pseudomeningoceles are seen in the intervertebral foramen and may extend variably both intra and extraspinally [3]. These pseudomeningoceles can be more aptly called CSF hygromas or cyst. Not all such CSF hygromas/cysts opacify perceptibly on conventional myelography because of dilution and relatively low radiographic resolution, but all will be opacified on CTM [4,5]. In this case pseudomeningocele at C7-T1 was not appreciated on myelogram however it was well delineated on CTM. According to Walker et al [6] detection of nerve root avulsion on CTM has sensitivity of 95% in patients with birth palsy and brachial plexus injury after trauma.

The dural tear may heal without any deformity of the thecal sac or may persist as pseudomeningocele containing CSF. As seen in this case, there is persist-

ence of pseudomeningoceles extending beyond the canal through the neural foramina. The avulsed nerve root may be adherent to the dura. On MRI dural tears should be suspected when there is deformity of the spinal cord and a subdural collection of CSF can be identified [1].

This type of damage to the brachial plexus is irreversible and generally results in partially or totally flail upper extremity. Surgical attempts to anastomose this avulsed nerve to the cord have not met with success [1].

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