NON MISSILE PENETRATING INJURY OF SPINE WITH RETAINED FOREIGN BODY

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Introduction

Traumatic spinal cord injury usually results from fracture dislocation or missile injuries. Non missile penetrating injuries of the spinal cord are rare in most of centres [1,2]. The impaction of foreign body in the vertebral body is even rarer [3]. We are reporting a case of impaction of foreign body in the vertebral body after an assault injury.

Case Report

A 45-year-old soldier while on leave at his village was assaulted in a land dispute. He lost his consciousness and was taken to a civil hospital where he regained his consciousness and noticed weakness of his left lower limb. He was given first aid by suturing of left scapular wounds and sent to our hospital the next day. Clinical examination revealed a haemodynamically stable and fully conscious patient. There was no cranial nerve deficit. Motor function of left lower limb was impaired, having hypotonia, a power of 2/5 grade and anaesthesia upto T3 dermatome, on left side along with loss of joint position, sense in the left foot and leg. Pain sensation was lost on the right side on T4 dermatome. Left knee ankle and plantar reflexes were absent. Locally there were three 5 to 10 cm long sutured wounds in left scapular region. Haematological investigations were normal but biochemical investigations revealed raised blood sugar level (Fasting Sugar of 150 mg and post prandial of 190 mg%). X-ray cervico dorsal spine revealed a metallic foreign body in the spinal canal at T1 level (Fig 1a and b), however, no fracture of vertebral elements was seen. As our computerized tomography facility was not operational at that time it could not be done. Patient was taken up for surgery. Through a midline incision over C7 to T3 spines, the spines and laminae were exposed and no fracture of posterior elements was found. C7 to T3 laminectomy was performed. Dorsal dura was found intact but there was a gush of cerebrospinal fluid from left side. Dura was opened and spinal cord was found lacerated and edematous on left side. The foreign metallic body was found in the anterior part of cord laceration as it was exposed gently and when attempt was made to pull it, it was found to be firmly impacted and could be pulled with great effort after holding firmly with a needle holder. It was a broken tip of a knife. There was no active bleeding. The cord was gently washed with saline, a gel foam applied to left side of dural rent and dorsal durotomy closed. Post operatively, he was given antibiotic cover with chloromycetin, cloxacillin and gentamicin along with insulin for two days and

Fig 1a & 1b : X-ray showing foreign metallic body at T1

tablet daonil subsequently. A check X-ray of dorsal spine showed no foreign body in the spine. He started recovering fast and was independently ambulant by 10th post operative day. However, by

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Fig. 2 : MRI showing epidural abscess at from C7 to D2 with metallic artifacts due to microfragments of metal in the vertebral body.

the end of 2nd week, he started having weakness of both lower limbs and developed quadriparesis with weakness of hand grip bilaterally within short time. There was no fever, local tenderness or collection. A magnetic resonance imaging study showed an epidural collection, however, cord status could not be seen because of metallic artefacts (Fig 2). Evacuation of epidural abscess and granulation tissue was done. Pus culture grew staphylococcus aureus sensitive to cloxacillin and gentamicin which were administered for two weeks and he regained his neurological function to great extent. The motor power became 4/5 in left lower limb and normal in other limbs. Right sided analgesia, left sided impaired touch below T2 dermatome, and impaired joint position sense in left lower limb persisted. However, he was independently ambulant. A computerised tomographic myelogram (CT myelo) done before discharge was absolutely normal (Fig-3).

Discussion

Non missile penetrating injuries of spinal cord are rare and have been attributed to constant strife, barbarism and sub economic conditions in two large reports from South Africa [3,4]. The reports from our country are few [2]. Lipschitz and Block [3] reported good results with conservative treatment, however, Thakur et al [2] reported good results with early surgery. There is no controversy about the role of surgery in retained foreign body, cerebrospinal fluid leaks and delayed worsening of neurological deficit due to abscess or granuloma [4].

As most of these injuries are due to assaults in brawl, males in the age group of 15-50 years are commonly affected being more violent than females [3]. Dorsal spine is the usual site and Brown Sequard syndrome is the common clinical manifestation as was the case in our patient. The injury may be caused by the object or in driven bone fragments or indirectly by injury to arterial or venous supply of the spinal cord. The object can enter the spinal canal without fractur-

Fig. 3 : CT myelogram showing normal cord and subarachnoid space

ing the body elements, through intralaminar space or rarely through intervertebral foramina.

Once the foreign body is seen on plain radiography, there is no need for myelography or even for computerised tomography scan (CT scan) as the artefacts caused by the metallic foreign body will degrade the image and no worthwhile information will accrue. However, impaction of foreign body may be seen and one should be well prepared for its removal. Magnetic resonance imaging (MRI) is contraindicated in the presence of metallic foreign body. However, in the absence of metallic foreign body, it is the ideal study for evaluation of such an injury. In case of delayed neurological deterioration due to abscess or granuloma formation, a lumbar myelogram/CT myelo/MRI will be required for evaluation and planning therapeutic strategies. The quality of MRI images still may be degraded by micro elements of metals in the vertebra which are not seen on the plain X-rays as happened in our case.

Removal of broken embedded metal piece should be done carefully by exposing it as completely as possible before pulling it out so that no further laceration of spinal cord is caused. Deeply and firmly impacted knife blades may not be pulled by artery forceps or needle holders and sometime may require pliers for extraction [3]. Delayed progressive neurological deterioration may occur due to retained fragments, meningitis, abscess, granuloma or iron encrustation [5,6]. In our patient this occurred due to epidural abscess which responded to standard surgical and antimicrobial treatment. The result of incomplete spinal cord injury due to stab wounds has been good in 50-60% cases [2-4] and same has been the case in our patients.

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