

Acute Spontaneous Spinal Epidural Hematoma A Life-Threatening Emergency

Pages with reference to book, From 148 To 150

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Introduction

Since Jackson reported the first case of Spinal Epidural Haematoma (SSEH) in 1869¹, some 250 cases have appeared in the literature². We report the first case of SSEH that showed good recovery of function even after complete tetraplegia and respiratory arrest, emphasizing the favourable outcome of surgical decompression. There have been reports of spontaneous resolution of the condition and recovery without surgical decompression³⁻⁹. Based on these reports conservative (non-operative) management has been advocated as a valid therapeutic option for some of these cases⁷⁻¹⁰. Biphasic nature of the clinical course in our case (temporary resolution followed by relapse and rapid progression), also previously reported by others², makes conservative management of apparently resolving cases risky and inappropriate. Critical review of the reports of conservatively treated SSEH shows that the indications for non-operative management of this condition are very limited and delay in surgical decompression can be catastrophic¹⁰. Early surgical treatment of the condition confers marked prognostic advantage¹¹⁻¹³ and conservative management, even in apparently resolving cases, should be discouraged².

Case Report

A 30-year-old goldsmith was at work when he experienced sudden neck pain with radiation to the back of the head. This was accompanied by weakness and numbness of all the four limbs and inability to pass urine. Within half an hour, both arms and legs became paralyzed and examination in the emergency room revealed tetraplegia with a sensory level at clavicles. An initial diagnosis of transverse myelitis or ischemic lesion of the cord was made and patient admitted to the neurology ward. Patient had previously been well and there was no significant medical history. Initial investigations including plain X-rays of the spine and coagulation profile were normal. During subsequent 24 hours, while the patient was in the neurology ward, there was partial resolution of neurological deficits as evidenced by return of movement and sensation in the limbs. It was felt that this initial clinical improvement supported the diagnosis of transient cord ischemic episode. However, 24 hours later, patient had a recurrence of symptoms and weakness progressed rapidly to complete tetraplegia. An urgent MRI of cervical spine (Figure A,B,C,D)



Figure A: Sagittal T-1 weighted MRI showing a large mass (arrow) posterior to the Spinal cord at the level of C3 C4. The mass has increased signal intensity in all sequences and is causing marked compression and displacement of the cord.

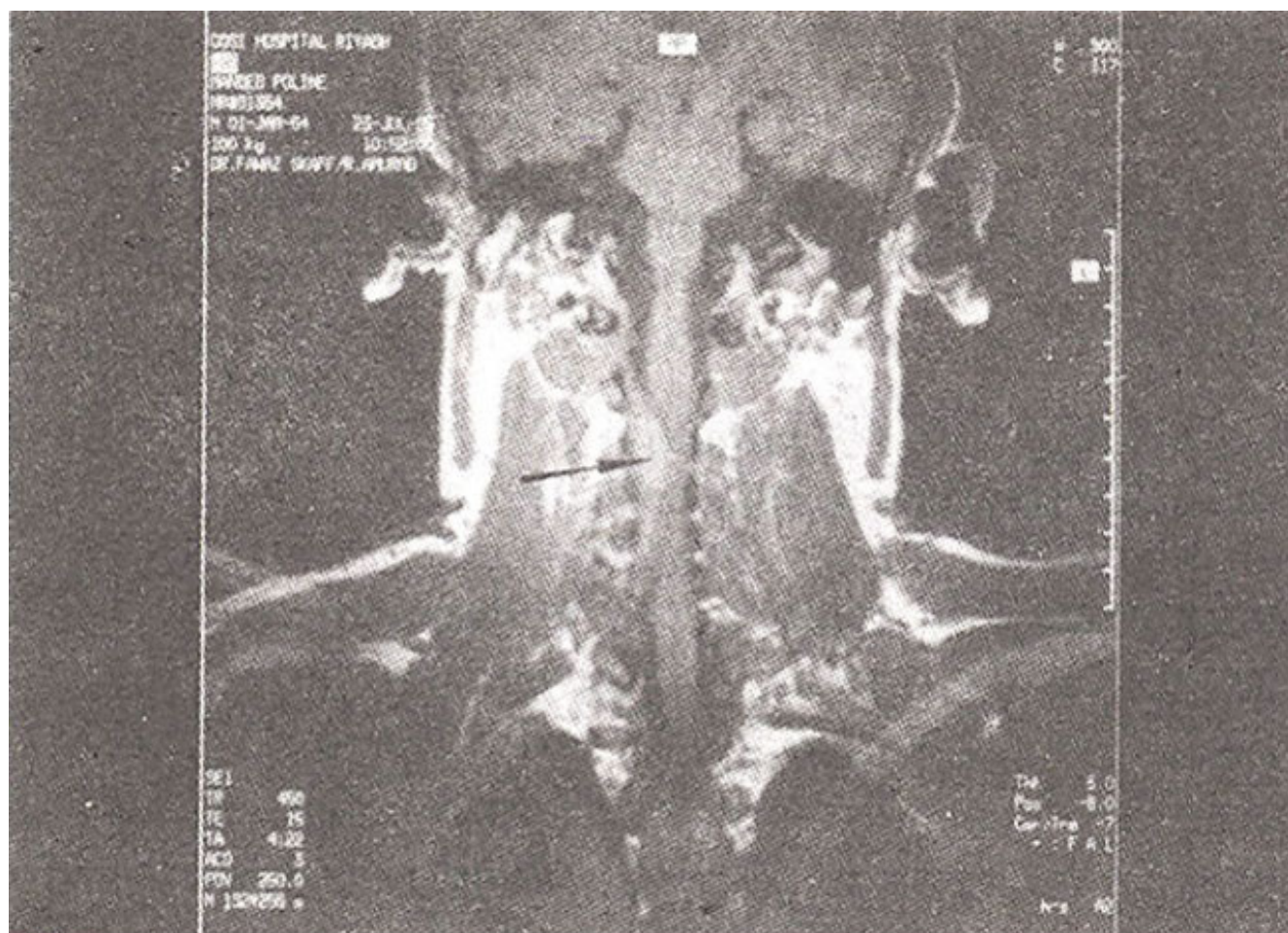


Figure B: Coronal T-1 weighted MRI showing increased signal intensity epidural mass (arrow) to the right side of the cord at C3-C4 level, note the compression and displacement of the cord to the left side.



Figure C: Sagittal T-2 weighted MRI showing the large epidural hematoma (arrow) with slightly inhomogeneous and predominantly high signal intensity (indicating fresh bleed and old clot). Note the marked cord compression from behind.

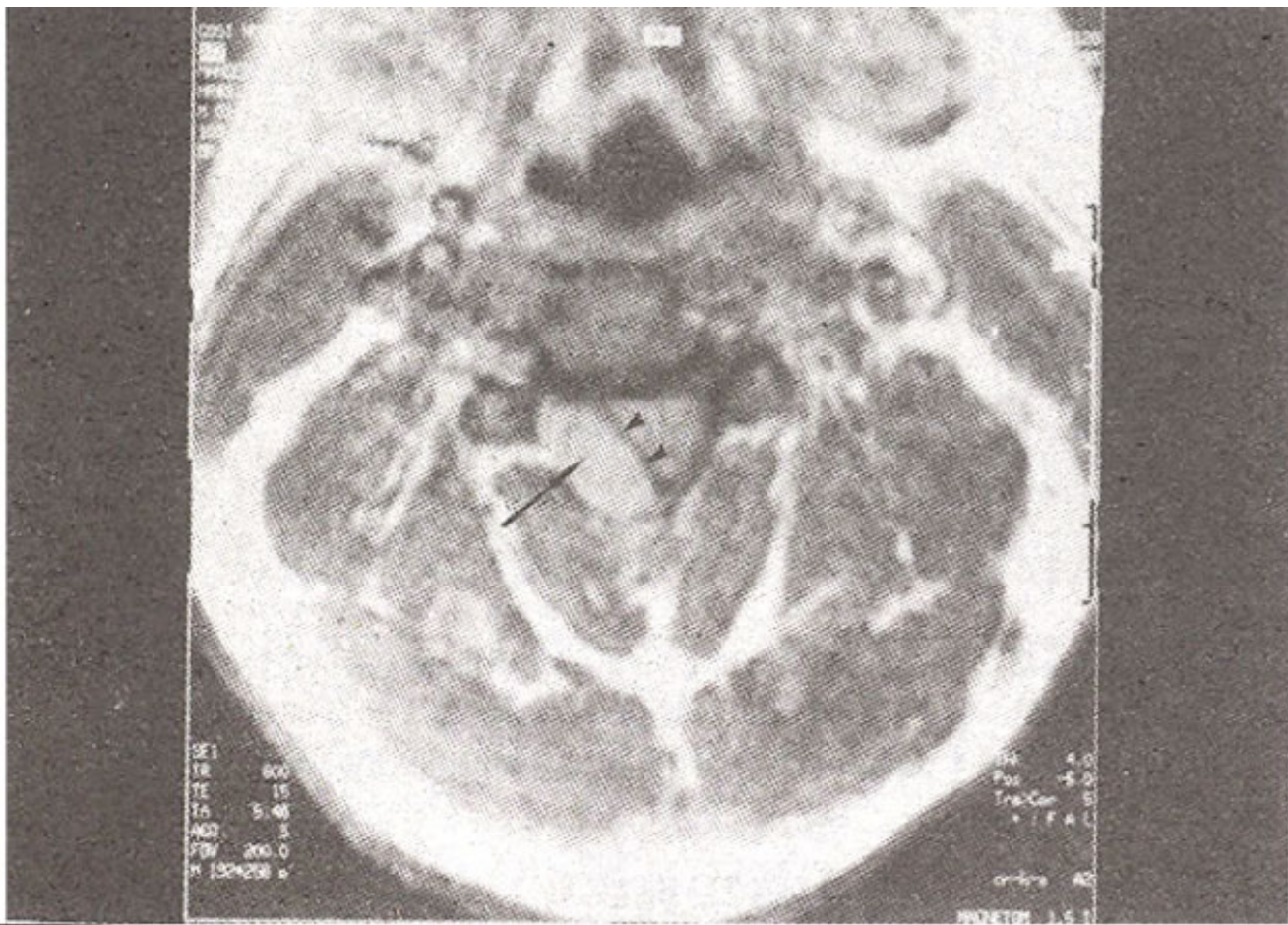


Figure D: Axial T-1 weighted MRI showing the epidural mass with increased signal intensity (arrow), located posteriorly and to the right of the cord, which is compressed and displaced to the left side. The dura is seen as a partition with weak signal between the hematoma and the spinal cord (arrow heads).

at this stage revealed acute epidural hematoma, mainly at the level of C3-C4, with marked compression and displacement of spinal cord. Within minutes of MRI examination the patient had respiratory arrest and was intubated, ventilated and transferred to the intensive care unit. Emergency upper cervical laminectomy was carried out. Operative findings were: A large epidural hematoma of mixed density (black and solid as well as bright red and semi-solid) occupied and extruded under pressure from the extradural space. Solid clot was located posteriorly and to the right side of the spinal cord that was markedly compressed, flattened and displaced to the left. Hematoma extended from C2 superiorly to C5 inferiorly. After removal of the clot the dural sac expanded and started pulsating. Histological examination of the clot showed no abnormality. Fresh epidural bleeding from unidentified bleeding points was controlled but no definite angioma or vascular malformation was seen. Post-operatively, spontaneous respiration returned so that patient could be taken off the ventilator on second post-operative day. Rapid recovery of neurological deficits followed. Patient was ambulatory with good recovery of motor power and sensation in two weeks, although return of urinary continence and removal of the catheter took another two weeks. Follow-up at 6 months showed full recovery.

Discussion

Acute spontaneous spinal epidural hematoma is a very rare cause of spinal cord compression¹². The true incidence is not known¹², but a neurosurgeon is not likely to encounter more than one or two cases during his lifetime. Any level of spinal canal may be involved although the thoracic region seems to be the most frequent site¹². Although considered to be idiopathic, some associations are well recognized. These include: epidural arteriovenous malformations^{2,14}, anticoagulant therapy^{2,13} hypertension¹², vasculitis², bleeding tendency² and minor trauma¹³. None of these factors was present in our case. Clinical picture in majority of cases described in literature^{2,10-13,16,17}, is one of fairly abrupt onset of spinal pain followed by rapidly progressive symptoms and signs of cord or cauda equina compression. Some cases, however, follow a more chronic or even a biphasic course^{2,13}. Temporary clinical improvement or even resolution followed by acute recurrence of neurological deficit and catastrophic deterioration in a few minutes as seen in our patient and previously described by others^{2,3,15}, can lead to serious delay in diagnosis and surgical decompression with tragic results. The differential diagnosis include: transverse myelitis, epidural abscess, extradural neoplasm, acute intervertebral disc prolapse and ischemic vascular accidents.

Plain radiography is usually normal². CT-Myelography will disclose extradural compression by a soft tissue mass but cannot differentiate hematoma from tumor or pus¹². MRI (Figure I) has been shown to demonstrate and localize the hematoma accurately and is therefore, the modality of choice for the diagnosis of spinal epidural hematomas^{2,9,17}. SSEH is a true surgical emergency and prompt decompressive laminectomy and evacuation of the extradural hematoma is the only safe treatment. Conservative management has been advocated in selected cases where neurological deficits are mild or resolving^{4,8,9}. However, acute recurrence and catastrophic progression of hematoma and neurological deficit hours after remission as seen in our case and observed by others^{2,13,15} makes conservative management of this condition inappropriate and unwise. A critical review of literature supports this view. Thus, 9 out of 51 non-operated patients died, 2 of whom had at first recovered¹⁵. Similarly, out of 49 reported cases of SSEH^{15,18} received no surgical treatment, all died within 9 days, some with a biphasic clinical course. Ideally, patients should be operated before the development of complete motor deficits¹⁴; but the condition is potentially reversible and good recovery of function is possible even after complete tetraplegia and respiratory arrest as was seen in our case.

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