ABSTRACT

Spinal epidural hematomas are rare, and their posttraumatic etiology is still rare. Patients’ symptomatology varies from clinically silent to dense neurological deficits. Pathogenesis of progression is unclear. They usually involve multiple spinal segments. Review of the literature showed that early surgical intervention is associated with excellent outcome in patients with significant deficits. Such cases usually require long segment surgical decompression. We present a rare case review of posttraumatic long segment anterior cervical epidural hematoma with significant neurological deficit, which was managed conservatively because the patient was not willing to have any surgical intervention. The patient improved gradually with better functional outcome. Our case shows that conservative treatment may be considered as an alternate management option in the treatment of anterior spinal epidural hematomas, thus avoiding long segment decompressive laminectomy. The mechanism of spontaneous resolution of spinal epidural hematoma is also discussed with a review of the literature.

Keywords: Anterior, Cervical, Epidural, Hematoma.

INTRODUCTION

Spinal epidural hematoma (SEH) is relatively infrequent. Posttraumatic SEHs are still rare compared to the spontaneous type. Patients present with varied symptomatology. Magnetic resonance imaging (MRI) findings are variable. Pathogenesis of progression is unclear. Prompt surgical evacuation is the main therapeutic option in patients with marked sustained neurological deficit (Frankel A–C) because symptom duration and initial neurological deficits are associated with favorable outcomes. Such cases usually require long segment surgical decompression. We present a rare case of posttraumatic anterior cervical epidural hematoma with significant neurological deficit, which was conservatively managed because the patient was not willing to have any surgical intervention. The patient improved neurologically with better functional outcome. Although more cases are needed for precise information, conservative management may still be considered as an alternate management option in the treatment of anterior SEHs, thus avoiding long segment decompressive laminectomy.

REPRESENTATIVE CASE

A 34-year-old gentleman presented with neck pain and bilateral upper limb weakness to the emergency room following a road traffic accident. He was hit by a mini lorry while crossing the road. The initial neurological examination showed bilateral weakness of wrist extensors (grade 4) and hand intrinsics. His lower limb power was grade 4, bilaterally. He had normal sensations and sluggish deep tendon reflexes of all extremities. Laboratory investigation showed normal coagulation profile. His weakness worsened over the next 24 hours to grade 2 power of both lower limbs and associated wrist drop and grade 2 power of hand intrinsics. Initial CT cervical spine showed angulation at C6 to C7 level with hyperdensity in the spinal canal behind the corresponding body, suggesting the possibility of epidural hematoma (Figs 1A and B). We advised MRI, but he was able to take it only after 1 week because of financial constraints. Magnetic resonance imaging showed epidural hematoma extending from C2 to D2, which was of mixed intensity in both T1 and T2 sequence (Figs 2A and B). On axial T1-weighted and T2-weighted images, the hematoma was anterior to the spinal cord (Figs 3A and B). We advised decompressive laminectomy. But the patient was not willing to undergo any surgical procedure. The patient was immobilized with Philadelphia collar along with steroids. His neurological status started improving after 1 week. His wrist extension improved to grade 3 power with slight improvement in hand grip. His lower limb power was grade 3. Magnetic resonance imaging was done after 2 weeks, which showed reduction in the size of hematoma (Figs 4A and B and Figs 5A and B). The patient gradually improved over the next 1 month to grade 4+ power of both lower limbs and grade 4+ power of wrist extensors and...
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Figs 1A and B: Computed tomography cervical spine sagittal reconstruction showing angulation at C6 to C7 level with hyperdensity in the spinal canal suggestive of epidural hematoma (black arrow head shows angulation with hematoma)

Figs 2A and B: (A) T1-weighted sagittal image showing hyperintense to hypointense epidural hematoma extending from C2 to D2 level; (B) T2-weighted sagittal MR image showing large epidural hematoma (white brackets show hematoma)

Figs 3A and B: (A) T2-weighted axial image showing anterior epidural hematoma (white arrow head shows hematoma); (B) T1-weighted image showing hyperintense anterior hematoma (white arrow head shows hematoma)

Figs 4A and B: (A) T2-weighted sagittal image showing reduction in size of hematoma; (B) T1-weighted image showing resolution of hematoma (white brackets show reduction of craniocaudal extent of hematoma)
hand grip. On 6 weeks’ follow-up, he was able to walk and do daily activities with minimal assistance.

DISCUSSION

Spinal epidural hematomas are rare, and posttraumatic SEHs are still rare.\(^1\) Spinal epidural hematoma accounts for 0.5 to 1.7% of all spinal injuries.\(^5\) Traumatic causes of SEH reported in the literature include road traffic accidents, fall from height, lumbar puncture, epidural anesthesia, and surgery of the spine. A majority of posttraumatic SEHs occur posteriorly, but rarely anterior location is also described.\(^6\)

Bleeding is of venous origin in majority cases and the location is usually posterior.\(^3\) Hematoma of arterial origin present with radicular symptoms.\(^3\)

Magnetic resonance imaging is the investigative modality of choice. Findings are variable depending on the oxidation state of blood inside hematoma.\(^2\) Most hematomas are homogenously isointense on T1-weighted images and homogenously hyperintense on T2-weighted images when examined within 36 hours of injury.\(^2\) Beyond 36 hours, they appear heterogeneously isointense to hyperintense lesion on T1-weighted images and as mixed hyper- to hypointense on T2-weighted images.\(^2\)

Mechanism of Spontaneous Resolution

Spontaneous resolution of hematoma has been reported previously.\(^7,8\) Rich vascularity due to dense capillary network in fatty alveolar tissue, motility of cervical spine, and pulsatile movement of cerebrospinal fluid (CSF) are proposed mechanisms of spontaneous resolution.\(^8\) Contrary to cranial epidural hematoma, osseous injury rarely occurs. Dura is less adherent to spinal canal in the cervical region; thus, hematoma can be accommodated in the spinal epidural space involving multiple levels.\(^9\)

Prompt surgical evacuation is the main therapeutic option in patients with marked sustained neurological deficits (Frankel A–C) because the symptom duration and initial neurological deficits are associated with favorable outcomes.\(^4,10\) Usually they require long segment surgical decompression. Conservative management is indicated in patients with mild neurological deficits (Frankel D–E).\(^7\)

Although spontaneous resolution of SEHs is very rare, several cases are reported in the literature showing favorable outcomes.\(^7,8\) Jang et al\(^7\) and Kim et al\(^8\) reported cases of spontaneous resolution of SEH. Although we lack evidence from randomized controlled studies with significant sample size, conservative management may still be considered an alternate management option in the treatment of SEHs, thus avoiding long segment decompressive laminectomy.

CONCLUSION

Spinal epidural hematomas are relatively infrequent. Posttraumatic SEH is still rare compared to the spontaneous type.\(^1\) Magnetic resonance imaging findings are variable.\(^2\) Pathogenesis of progression is unclear.\(^3\) Our patient presented with significant neurological deficit but was managed conservatively since he was not willing to undergo surgery. The patient improved neurologically with better functional outcome. Although randomized controlled studies with significant sample size need to be conducted for precise information, conservative management may be considered an alternate management option in the treatment of anterior SEHs, thus avoiding long segment decompressive laminectomy.

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