Case Report

Cervical epidural hematoma in a child

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ABSTRACT

Pediatric cervical epidural hematoma is an uncommon diagnosis and very few cases have been reported so far. The condition is difficult to diagnose and requires immediate surgical intervention to obtain the best possible neurological outcome. Most of the cases are of a spontaneous origin. We report a case of traumatic cervical epidural hematoma, which was managed surgically, resulting in complete neurological recovery.

Key words: Cervical epidural hematoma, traumatic spinal hematoma, traumatic pediatric quadriparesis, cervical trauma, cervical spine injury

Introduction

Spinal epidural hematoma was first described by JACKSON in 1869.[1] Since then, only about 40 other pediatric cases have been reported so far, pointing toward the rarity of this lesion. The majority of these cases are spontaneous epidural hematomas,[2] where only few have a traumatic origin.[3] In all these case reports, the prime importance was early diagnosis and urgent evacuation of the hematoma for a good functional outcome.[2,4,5] In this pretext, we report the case of a six -year-old boy who was admitted and managed surgically at our institution.

Case Report

A six-year-old boy presented to the Emergency Department because of severe neck pain and acute onset of quadriparesis, more prominent in the lower limbs than in the upper limbs. His symptoms had started a few hours earlier when he was practicing judo karate and had a blow on the nape of the neck and fell down. There was no previous relevant medical or surgical history. On examination, the patient was conscious, oriented, alert, and obeying verbal commands. His motor examination revealed bilateral (B/L) upper extremity weakness (power grade - 4/5) and B/L lower limb weakness (power grade 3/5). There was no sensory deficit. The tone and reflexes in all the limbs were normal. Tenderness was present in the cervical region. The rest of the physical examination was within normal limits. His neck was stabilized in a hard cervical collar and investigations were done. The patient's radiographic evaluation included a plain X-ray and MRI cervical spine. X-ray of the cervical spine showed no fracture and the anatomical alignment was maintained.

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MRI

Sagittal T1-weighed MRI images showed a large slightly hyperintense, space-occupying lesion extending from C3 to T4 and displacing the spinal cord. The sagittal T2-weighed image showed the same space-occupying lesion, but it was isointense. On axial imaging the same findings were found on T1 and T2, demonstrating cord compression. The coagulation studies, platelet count, and hemogram were under normal limits. C7 hemilaminectomy and surgical evacuation of the hematoma was done by a vertical midline skin incision, extending from the external occipital protuberence to the T4 spinous process. No mass or vascular anomaly was detected intraoperatively. Complete hemostasis was achieved. The cord was decompressed completely and cord pulsations could be visualized. There was no intraoperative complication. The patient improved neurologically and at the time of discharge had power

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grade 5/5 in all four limbs. The patient is on a regular follow-up and is totally asymptomatic and neurologically intact.

Discussion

Spinal epidural hematomas are very rare in children.[2,4,5] The annual incidence of spontaneous epidural spinal hematoma has been reported to be 0.1 in 100,000 population, whereas, in the pediatric population this incidence is significantly lower. Only 40 cases have been reported in literature, out of which 34 were non-traumatic and the rest were traumatic (as in our case). The cause of the hematomas in the non-traumatic cases was probably related to tumors, arteriovenous malformations, epidural hemangiomas, coagulopathies, infections, and bleeding diatheses.[5-7] The location of the hematoma in the vast majority of cases was cervical (as in the present case), but thoracic[2] and lumbar[7] epidural hematomas have also been reported. The clinical presentation of epidural hematomas in pediatric patients varies significantly; abnormal crying might be the only symptom in infants, which makes an appropriate diagnosis even more challenging. Neck pain and tenderness, torticollis,[5] focal motor or sensory deficits (depending on the location of the hematoma), irritability, and the Brown–Sequard syndrome[8] are some of the most commonly reported presenting symptoms. The progression of symptomatology and clinical signs is usually very rapid as was seen in our case, although slower progression over a few days is also possible. The neuroimaging workup of patients with suspected spinal epidural hematoma must include an MRI, not only to delineate the hematoma and the relationship with the thecal sac, but also to rule out any underlying vascular or other disorder. In addition, obtaining a preoperative spinal angiogram, and newer noninvasive imaging modalities like computed tomography (CT) angiography and cervical magnetic resonance angiography (MRA) could be good supplementary techniques for visualizing suspected vascular abnormalities.[9] Furthermore, appropriate laboratory tests are a prerequisite to rule out any bleeding diathesis or coagulation disorders. Hemilaminectomy (as in our case) appears to provide adequate exposure for hematoma evacuation, even in the case of large lesions that cross the midline, and it minimizes the risk of developing a postlaminectomy deformity, which has been reported to be as high as 46% in patients younger than 19 years of age.[4] Multilevel Laminoplasty is another surgical option for evacuating spinal epidural hematomas as this procedure minimizes the risk of developing postlaminectomy deformity. We have not found any comparative analysis of multilevel hemilaminectomy or laminoplasty, for development of postoperative deformities. As far as we know, the development of long-term, postoperative deformities has not been investigated in any comparative study of multilevel hemilaminectomy or laminoplasty. In adult patients, however, laminoplasty appears to be superior to hemilaminectomy in avoiding postoperative worsening of the cervical curvature, although the postoperative range of motion is similar with both techniques.[3] We selected hemilaminectomy in our cases because of the shorter operating time and because we were more familiar with the procedure, but laminoplasty definitely represents a valid surgical option in the management of these cases. In our patient the outcome was excellent, with full recovery occurring immediately post the operation.

Conclusions

Spinal epidural hematoma in pediatric patients is a rare entity, but it does occur. Early diagnosis of this condition and rapid surgical evacuation are of paramount importance for a better neurological outcome. Unfortunately, the nonspecific presenting symptomatology and clinical signs, especially in infants, makes the diagnosis quite challenging. The clinician should be suspicious of this entity and always include cervical spine epidural hematoma in the differential diagnosis of pediatric patients, who present with acute neck deformity or pain.

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