Case Report

**Traumatic cervical epidural hematoma in an infant**

Vithal Rangarajan, Sandip B Mavani, Trimurti D Nadkarni, Atul H Goel

Department of Neurosurgery, King Edward Memorial Hospital, Seth G.S. Medical College, Mumbai, Maharashtra, India

Corresponding author: Prof. Trimurti D Nadkarni, Department of Neurosurgery, King Edward Memorial Hospital, Seth G.S. Medical College, Parel, Mumbai - 400 012, Maharashtra, India. Email: tdnadkarni@hotmail.com

Journal of Craniovertebral Junction and Spine 2013, 4:9

Abstract

An 8-month-old male infant had presented with a history of a fall from the crib a fortnight ago. He had developed progressive weakness of both lower limbs. On examination, the infant had spastic paraplegia. Magnetic resonance (MR) imaging of the cervical spine showed an epidural hematoma extending from the fourth cervical (C4) to the first dorsal (D1) vertebral level with cord compression. The patient had no bleeding disorder on investigation. He underwent cervical laminoplasty at C6 and C7 levels. The epidural hematoma was evacuated. The cervical cord started pulsating immediately. Postoperatively, the patient's paraplegia improved dramatically in 48 hours.

According to the author's literature search, only seven cases of post-traumatic epidural hematoma have been reported in pediatric patients, and our patient is the youngest. The present case report discusses the etiopathology, presentation, and management of this rare case.

**Key words:** Cervical epidural hematoma, cervical trauma, traumatic spinal hematoma

INTRODUCTION

Spinal epidural hematoma was first described by Jackson in 1869.[1] Isolated spinal epidural hematoma can be post-traumatic or spontaneous. Spontaneous hematomas are more common than post-traumatic epidural hematomas. The annual incidence of spontaneous epidural spinal hematoma has been reported to be 0.1 in 100,000 in the general population, whereas, in the pediatric population, this incidence is significantly lower. Only 40 pediatric cases have been reported in the literature, of which 34 were spontaneous and the rest were traumatic.[2] According to the author's literature search, only 7 cases of post-traumatic epidural hematoma have been reported in pediatric patients till now, and the present case is the youngest.[3,4]

Although the lesion is located in the thoracolumbar region in older patients, the cervicothoracic site is more common in children.[5] Presenting symptoms in children are usually nonspecific like irritability and crying, making diagnosis difficult. Early surgical intervention has been reported to result in more favorable outcomes in pediatric patients as compared to adults.[5,6] However, the present case of an 8-month-old child with post-traumatic cervical epidural hematoma though diagnosed and treated late, resulted in a complete recovery.

CASE REPORT

An 8-month-old infant had a history of a fall from the crib a fortnight prior to admission. The mother noticed a progressive decrease in movement in both the lower limbs of the child, which gradually worsened to paraplegia. On examination, the infant had spastic paraplegia. The hematological profile was normal. Magnetic resonance (MR) scan of the cervical spine with screening of the entire spine showed an epidural hematoma from C4 to D1 vertebral levels with severe cord compression [Figures 1 and 2].

At surgery in prone position, C6 and C7 laminoplasty was performed. An approximately 20 mL liquefied blood clot was drained. Dural pulsation resumed immediately after removal of the hematoma.
The patient had a dramatic recovery of the lower limb function in the 48-hour postoperative period and started moving both lower limbs well. Bladder voiding was normal and complete and did not require catheterization.

**DISCUSSION**

The spinal epidural space contains loose fatty tissue and a venous plexus. The epidural venous plexus is a network of large thin-walled veins. The epidural vertebral venous plexus is divided into anterior and posterior parts. The anterior part runs fairly constant and is tightly attached to the posterior longitudinal ligament via Hofmann's ligaments. On the other hand, the posterior part courses variably and disperses into the loose epidural fat. Most authors agree that the rupture of this valveless epidural internal venous plexus is the primary source of an epidural hematoma. Spinal cord enhancement may be apparent and should be distinguished from inflammation or neoplasia. As noted in our case, the hematoma is seen as a posterior high-signal intensity lesion on T1-weighted image. On T2-weighted images, the clot appears as a low-signal intensity suggesting a subacute-type hemorrhage of more than 3 days’ duration. T1-weighted MR images are most valuable because of the pathognomonic signal shift from isointensity with the cord in the early period to hyperintensity in the intermediate stage of clot resolution.

Early surgical evacuation of the clot is recommended as a treatment of choice for symptomatic traumatic spinal epidural hematoma. In exceptional cases where the neurologic deficit is minor, conservative management may be undertaken, especially with the coexistence of a serious coagulopathy and associated serious medical disease. A laminoplasty is favored compared to laminectomy in the pediatric population to avoid postlaminectomy deformity in the growing spine.

**CONCLUSION**

Early diagnosis and surgical intervention have the most favorable outcome for spinal epidural hematomas. In infants, as noted in our case, even a delayed diagnosis and treatment results in a good outcome probably due to the plasticity of the infant nervous system.
REFERENCES

1. Jackson R. Case of spinal apoplexy. Lancet 1869;2:5-6.
2. Lim JJ, Yoon SH, Cho KH, Kim SH. Spontaneous Spinal Epidural Hematoma in an Infant: A Case Report and review of the literature. J Korean Neurosurg Soc 2008;44:84-7.
3. Gupta V, Kundra S, Chaudhary A, Kaushal R. Cervical epidural hematoma in a child. J Neurosci Rural Pract 2012;3:217-8.
4. Alva NS. Traumatic spinal epidural hematoma of a 10-month-old male: A clinical note. Pediatr Neurol 2000;23:88-9.
5. Patel H, Boaz JC, Phillips JP, Ganq BP. Spontaneous spinal epidural hematoma in children. Pediatr Neurol 1998;19:302-7.
6. Lee JS, Yu CY, Huang KC, Lin HW, Huang CC, Chen HH. Spontaneous spinal epidural hematoma in a 4-month-old infant. Spinal Cord 2007;45:586-90.
7. Groen RJ, Groenewegen HJ, van Alphen HA, Hoogland PV. Morphology of the human internal vertebral venous plexus: A cadaver study after intravenous Araldite CY 221 injection. Anat Rec 1997;249:285-94.
8. Caldarelli M, Di Rocco C, La Marca F. Spontaneous spinal epidural hematoma in toddlers: Description of two cases and review of the literature. Surg Neurol 1994;41:325-9.
9. Pai SB, Maiya PP. Spontaneous spinal epidural hematoma in a toddler — A case report. Childs Nerv Syst 2006;22:526-9.
10. Groen RJ, van Alphen HA. Operative treatment of spontaneous spinal epidural hematomas: A study of the factors determining postoperative outcome. Neurosurgery 1996;39:494-508.
11. Groen RJ. Non-operative treatment of spontaneous spinal epidural hematomas: A review of the literature and a comparison with operative cases. Acta Neurochir (Wien) 2004;146:103-10.
12. Park SW, Yoon SH, Cho KH, Shin YS, Ahn YH. Infantile lumbosacral spinal subdural abscess with sacral dermal sinus tract. Spine (Phila Pa 1976) 2007;32:E52-5.

How to cite this article: Rangarajan V, Mavani SB, Nadkarni TD, Goel AH. Traumatic cervical epidural hematoma in an infant. J Craniovert Jun Spine 2013;4:37-9.

Source of Support: Nil, Conflict of Interest: None declared.

Author Help: Online submission of the manuscripts

Articles can be submitted online from http://www.journalonweb.com. For online submission, the articles should be prepared in two files (first page file and article file). Images should be submitted separately.

1) First Page File:
   Prepare the title page, covering letter, acknowledgement etc. using a word processor program. All information related to your identity should be included here. Use text/rtf/doc/pdf files. Do not zip the files.
2) Article File:
   The main text of the article, beginning with the Abstract to References (including tables) should be in this file. Do not include any information (such as acknowledgement, your names in page headers etc.) in this file. Use text/rtf/doc/pdf files. Do not zip the files. Limit the file size to 1024 kb. Do not incorporate images in the file. If file size is large, graphs can be submitted separately as images, without their being incorporated in the article file. This will reduce the size of the file.
3) Images:
   Submit good quality color images. Each image should be less than 4096 kb (4 MB) in size. The size of the image can be reduced by decreasing the actual height and width of the images (keep up to about 6 inches and up to about 1800 x 1200 pixels). JPEG is the most suitable file format. The image quality should be good enough to judge the scientific value of the image. For the purpose of printing, always retain a good quality, high resolution image. This high resolution image should be sent to the editorial office at the time of sending a revised article.
4) Legends:
   Legends for the figures/images should be included at the end of the article file.