

Lumbar Vertebral Hemangioma with Extradural Extension, Causing Neurogenic Claudication: A Case Report

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Received: 3 May 2011; Received in revised form: 1 Jun. 2011; Accepted: 22 Jun. 2011

Abstract- The authors present a rare case of lumbar vertebral hemangioma extending to the epidural space with a bisected appearance and impinging on thecal sac. This 52-year-old lady presented with one year history of low back pain and bilateral leg radiation. Plain radiography showed vertical linear streaks at L2 vertebral body and axial computed tomography (CT) scan revealed small "polka dot" appearance within the vertebral body. Magnetic resonance imaging (MRI) showed low signal intensity on T1-weighted images in L2 vertebral body which was not characteristic for hemangioma. The patient underwent an L2 laminectomy, spinal canal decompression and posterior spinal instrumentation. This study indicates that lumbar vertebral hemangioma can extend to the epidural space and cause neurologic symptoms. Magnetic resonance imaging may not show diagnostic features, especially in active lesions and plain radiography and CT scan may be helpful.

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Acta Medica Iranica, 2011; 49(10): 697-700.

Keywords: Lumbar vertebral hemangioma; Extradural extension; Neurogenic claudication

Introduction

Hemangiomas are congenital vascular malformations and pathologists frequently consider them as hamartomatous malformations (1). Only 0.9-1.2% of all hemangiomas are symptomatic (2,3), most of them are confined to the thoracic spine and extremely rare in the lumbar area (4). Here we present a case of lumbar vertebral hemangioma with extradural extension causing low back pain and neurogenic claudication.

Case Report

A 52-year old female patient was admitted to neurosurgery department of Shariati Hospital with low back pain and radiation to both lower limbs. The onset of symptoms dated back to one year ago and was associated with stiffness and discomfort in both legs which was precipitated by walking and prolonged standing. She was unable to sleep well due to severe paresthesia in her legs and feet. Neurological examination revealed 4/5 motor function at both lower limbs. Lasegue's sign was present at 45 degrees for both legs. Laboratory investigations were performed which

ruled out inflammatory and infectious conditions. Plain radiographs of lumbar spine showed vertical linear streaks ("corduroy cloth" appearance) at L2 vertebral body (Figure 1). Axial computed tomography (CT) scan at the level of lesion showed small "polka dot" appearance within the body (Figure 2).



Figure 1. Lumbar spine shows vertical linear streaks ("corduroy cloth" appearance) at L2 vertebral body.

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Figure 2. Axial CT scan shows small "polka-dot" appearance in the body. Neural arch is intact.

Magnetic resonance imaging (MRI) revealed low signal intensity with small scattered areas of increased signal intensity on T1-weighted images and marked increased signal on T2-weighted images in involved vertebral body. The lesion contained signal void areas on axial T2-weighted sequences (Figure 3A, 3B). After intravenous administration of contrast, entire body showed intense heterogeneous enhancement (Figure 3C). Also there was bisected expansion to extradural space impinging on thecal sac which enhanced homogeneously (Figure 3D).



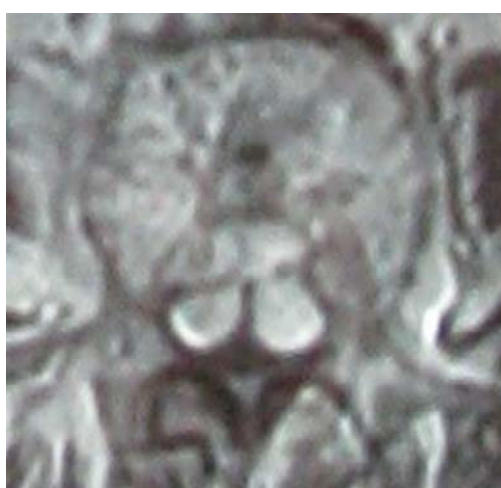
A



B



C



D

Figure 3. Magnetic resonance images at T1-weighted sagittal view (A) demonstrate hypointensity in L2 vertebral body with small areas of high signal intensity. There are small signal void areas in T2 weighted axial image (B). T1-weighted sagittal sequence with contrast substances (C) shows heterogeneous contrast enhancement. Axial view demonstrates extradural expansion of lesion with bisected appearance (D).



Figure 4. Post operation radiography.

Imaging studies suggested a vascular lesion with hemangioma being the most likely differential diagnosis. Recommendation was made for angiography and embolization to be performed. However, due to financial issues it did not proceed. The patient underwent an L2 laminectomy. There was a gray-reddish, fleshy and highly vascular mass in ventral side of thecal sac which bled extensively during removal. The spinal canal was decompressed and posterior spinal instrumentation with bone fusion was implanted to stabilize this region of spinal column (Figure 4).

Histopathologic examination of the tissue revealed small capillary spaces lined by small cells without mitotic figures consistent with the diagnosis of capillary hemangioma (Figure 5). Postoperative course was uneventful. Two months later she found total recovery from all previous neurological deficits and returned back to her daily work. She was followed regularly and now she is symptom free after one year.

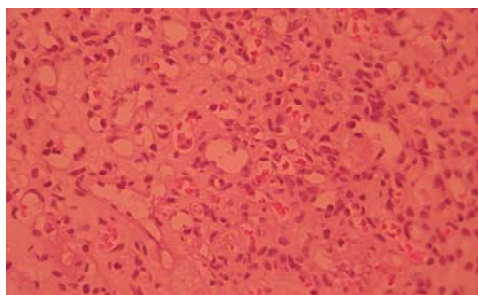


Figure 5. Photomicrograph showing a collection of small capillaries, some ones containing red blood cells, without mitotic figures or fat cells. H & E, original magnifications; 400X.

Discussion

Vertebral hemangioma is considered to be a benign lesion of bone, usually of dysembryogenetic origin or a hamartomatous lesion (4). Vertebral hemangioma has an estimated incidence of 11% in the population, based on autopsy series and reviews of plain spine films (5,6). Merely about one percent of lesions are symptomatic (2,3), among them, 54% are characterized only by pain, but 45% are associated with variable neurologic symptoms (7). Neurological symptoms due to cord compression by thoracic vertebral hemangioma have been reported in several cases, but it is extremely rare in lumbar vertebral lesions (8,9). In our case, neurogenic claudication and weakness of lower limbs were caused by an extradural extension of lumbar vertebral hemangioma compressing the thecal sac.

Plain film is a valuable simple method to suggest the diagnosis of a vertebral hemangioma. It may show vertically striated vertebral bodies producing "corduroy cloth" appearance or a coarse "honeycomb" appearance (4). Laredo *et al.* found that six features were seen significantly more often in those compressing the cord: location between T3 and T9, involvement of the entire vertebral body, extension to the neural arch, an expanded cortex with indistinct margins, an irregular honeycomb pattern, and soft tissue mass (10). The characteristic finding of CT scan is a "polka dot" appearance within the vertebral body because the vertical trabeculae are imaged in cross section (4).

Vertebral hemangiomas show increased signal on T1- and T2-weighted magnetic resonance images. Chemical shift images and histological studies demonstrate that adipose tissue causes the increased signal on T1-weighted images (11). Unlike most vertebral hemangiomas which are hyperintense on T1 weighted images, in our patient, the hemangioma had low signal on T1-weighted images. Laredo *et al.* suggested that fatty vertebral hemangiomas may represent inactive forms of vertebral hemangioma, while soft-tissue content at CT and low signal intensity at MRI may indicate a more active vascular lesion with potential to compress the spinal cord (12). Similarly the activity of the lesion in this case was compatible with hypointensity on T1-weighted images and low content of fat as found in histopathologic examination.

In our patient, plain radiography and CT scan were in favor of hemangioma but MRI didn't show the characteristic feature of hemangioma (hyperintensity on T1-weighted images) which this underscores the importance of plain radiography and CT scan in the

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diagnosis of vertebral hemangioma. The bisected appearance of the epidural component on axial images is notable and caused by a low signal tissue on T1 and T2-weighted images which may correspond to the posterior longitudinal ligament.

This report indicates that lumbar vertebral hemangioma is not always an innocent radiologic finding; it can extend to the epidural space and cause neurologic symptoms. Magnetic resonance imaging may not show the characteristic features, especially in active forms. Plain radiography and CT scan can be helpful in this situation. Early diagnosis and adequate neural decompression can cause remarkable improvement.

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