SPINAL CORD COMPRESSION DUE TO EPIDURAL EXTRAMEDULLARY HAEMATOPOIESIS IN ACUTE MYELOID LEUKEMIA: MRI FINDINGS

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A 32 year-old-man with a history of acute myeloid leukemia on remission for one year presented with sudden back pain, weakness and reduced sensation in both legs, and urinary incontinence that had progressed over one weak. MRI of thoracic and lumbar spine was performed on a 1.5 T system using a body coil due to his neurological symptoms. T1-weighted sequence (TR/TE: 617/15 mse) and T2-weighted sequence (TR/TE: 4300/110 mse) on sagittal and axial images with 3 mm slice thickness were used. Gadolinium enhanced T1-weighted axial images were obtained. Magnetic resonance imaging (MRI) demonstrated spinal cord compression by epidural extramedullary hematopoietic tissue. Spinal epidural space is a very rare site for extramedullary hematopoiesis.

Key words: Acute myeloid leukemia, extramedullary hematopoiesis, spinal cord, MRI.

Eur J Gen Med 2008;5(1):42-44

INTRODUCTION

Extramedullary hematopoiesis is encountered in diseases with chronic overproduction of red blood cells. Abnormal hematopoietic tissue usually develops in sites involved in hematopoiesis during fetal development, such as the spleen, liver and kidney; however other locations, such as the paraspinal tissue, especially in the posterior mediastinum, may be involved Spinal epidural space is a very rare site for extramedullary hematopoiesis and most reports of this condition have been cases of thalassemia, or myeloproliferative disorders like myelofibrosis and polycythemia vera (1,2).

CASE

A 32 year-old-man with a history of acute myeloid leukemia on remission for one year presented with sudden back pain, weakness and reduced sensation in both legs, and urinary incontinence that had progressed over one weak. In neurological examination there was nothing special except paraparesis of the legs with increased deep tendon reflexes and Babinski's sign. Abnormal laboratory findings were anemia (Hb 10.1 g/dl, RBC 3.04x106/mm3) and increased lactate dehydrogenase blood level (558 IU/l). MRI of thoracic and lumbar spine was performed on a 1.5 T system using a body coil due to his neurological symptoms. Magnetic resonance images revealed posterior epidural masses extending from T1 to T11. Vertebral marrow signal decreased on T2-weighted images due to low fat content showing increased production of red blood cells (Figure 1A). The masses were hyperintense on both T1 and T2-weighted images compared with spinal cord (Figure 1B). Axial images better delineated the close relationship of the epidural masses with the spinal cord and nerve roots. The spinal cord signal was hyperintense due to edema at the levels of compression on T2-weighted images (Figure 1C). The appearances suggested the diagnosis of extramedullary hematopoiesis. There was not any characteristic MRI finding for extramedullary hematopoiesis as thoracic paravertebral foci of hematopoiesis or

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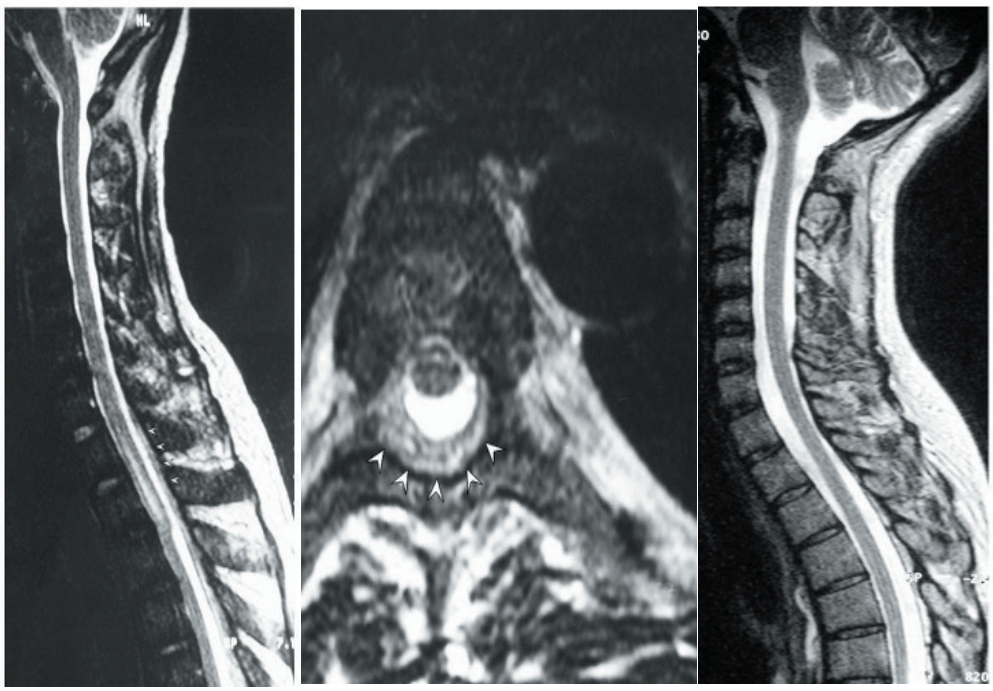

Figure 1A. Sagittal spin-echo T2-weighted MR image of the mid-thoracic spine shows extensive decreased signal intensity throughout the vertebral bodies due to increased production of red blood cells and clearly reveals posterior epidural mass. Figure 1B. The masses are hyperintense compared with spinal cord on axial spin-echo T2-weighted MR images. Figure 1C. On axial spin-echo T2-weighted MR image the close relationship of the epidural masses with the spinal cord and the nerve roots is better delineated. There is also high signal intensity in the spinal cord at the level of compression.

expansion of the posterior parts of the ribs. The treatment choice was intravenous prednisolone lasting for two weeks (250 mg; 4 times in a day). His legs became stronger and he regained sensation over the ensuing 5 weeks. Posterior epidural masses and cord edema disappeared on follow-up MRI of the spine.

DISCUSSION

The most common sites of extramedullary hematopoiesis are the liver and the spleen. Paravertebral heterotopic marrow is less common and, when present, usually within the thorax Involvement of the spinal epidural space by hematopoietic tissue is rather unusual. The rare complication of cord compression due to extramedullary hematopoiesis has most often been reported in patients with thalassemia. Cord compression caused by extramedullary hematopoiesis has also been reported in cases of myelofibrosis, sickle cell anemia and polycythemia vera (3-5) . In our case, thoracic cord compression was due to extramedullary hematopoiesis caused by AML that is rarer. Spinal cord compression secondary to extramedullary hematopoiesis commonly occurs in the mid-to-lower thoracic region possibly because of the marrow diameter of the spinal canal in this region .

Treatment of cord compression due to extramedullary hematopoiesis is controversial. In earlier reports, treatment consisted of laminectomy alone or with radiotherapy, with satisfactory responses in most patients. More recently, radiotherapy alone has commonly been carried out because of the well-known radiosensitivity of hematopoietic tissue and its accuracy in the treatment of extramedullary hematopoiesis (4-6) . In our patient, by the end of the intravenous steroid therapy his neurological problems had been resolved gradually and he had not undergone additional treatment for extramedullary hematopoiesis.

In conclusion, extramedullary hematopoiesis has to be kept in mind

in the differential diagnosis of epidural masses although there are not any typical skeletal changes for extramedullary hematopoiesis.

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