Resection of a vertebral hemangioma after preoperative embolization

Case report

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Preoperative arterial embolization of a vertebral hemangioma allowed surgical excision of the vertebral body, restoration of normal anatomic continuity of the spinal canal, and improvement in myelopathy.

**Key Words** - hemangioma - spinal neoplasm - spinal fusion - vertebral hemangioma

Myelopathy secondary to a vertebral hemangioma has previously been treated by indirect approaches. Improvement in myelopathy has been reported following radiation therapy, laminectomy, selective embolization, and combinations of these methods. These techniques, however, do not restore normal anatomic continuity of the spinal canal.

We are describing the preoperative embolization of a vertebral hemangioma, which permitted resection of the tumor and correction of the anatomic deformity.

**Case Report**

A 52-year-old man was admitted to the hospital because of increasing difficulty in walking after a fall 2 years earlier.

**Examination.** Perception of joint rotation was decreased in both great toes. The dorsiflexors of both feet were weak and the gastrocnemius muscles were atrophic, more on the right than the left. Perception of pinprick was decreased bilaterally below the inguinal ligament.

On spine films the body of T-12 appeared compressed and trabeculated. No other abnormalities were observed (Fig. 1). Gas myelography was performed. Because of spinal subarachnoid block at T-12, gas was also introduced through a lateral cervical puncture to delineate the lower thoracic cord. Lateral films showed nearly complete occlusion of the spinal canal by the abnormal T-12 vertebra (Fig. 2). Selective transfemoral spinal arteriography was performed because of the suspected vascular nature of the tumor. The tumor was supplied by the 11th and 12th intercostal arteries and by the first lumbar artery bilaterally (Fig. 3 left). Catheter embolization of the vessels supplying the tumor was performed and satisfactory obliteration of the blood supply was achieved (Fig. 3 right).

**Operation.** The patient's neurological condition did not change. On the third day after embolization, the T-12 vertebra was ap-
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FIG. 1. Plain x-ray film showing a loss of height of the T-12 vertebra with trabeculation characteristic of vertebral hemangioma.

FIG. 2. Gas myelogram showing complete spinal subarachnoid block with compression of the spinal cord and kyphosis.

proached bilaterally, by the lateral extracavitary approach.\textsuperscript{1,8,8} The pedicles and most of the body of T-12 were resected (Fig. 4). The tumor appeared friable and exuded a reddish-brown material when compressed. Several small pieces of coagulum were removed from the tumor. Bleeding from the tumor itself was minimal and the total blood loss for the procedure was estimated at 1700 cc. All the tumor was removed except for a small rim immediately posterior to the aorta. Harrington rods were placed for correction of kyphosis. An iliac crest graft was placed from the T-11 to the L-1 vertebral body (Fig. 5). The tumor was identified histologically as a hemangioma.

Postoperative Course. Four days after surgery the patient had made a complete

FIG. 3. Intercostal arteriograms showing (left) the extensive vascular pattern of the tumor and (right) obliteration of blood supply following embolization.
neurological examination was unchanged 1 year after surgery. The Harrington rods were removed at this time, and no further spine deformity has been noted since their removal.

**Discussion**

Vertebral hemangioma is one of the most frequently encountered vertebral tumors at autopsy. Associated spinal cord dysfunction, although uncommon, may be caused by any of the following: 1) extension of the tumor into the epidural space, 2) angiomatous hypertrophy of the vertebral arch, or 3) collapse of the vertebral body, frequently with kyphosis. Laminctomy is an effective treatment for hypertrophy of the vertebral arch, but is not suitable when the vertebral body is affected. While both arterial embolization and radiation therapy have been reported to provide relief of symptoms in some cases, neither can be expected to cor-

**Fig. 4.** Diagram shows resection of portions of the twelfth ribs, the pedicles, and the majority of the T-12 vertebra.

**Fig. 5.** Polytomograms performed (left) 2 weeks and (right) 1 year after surgery showing resection of the hemangioma, correction of the angulation, and the iliac crest graft in place.
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correct spinal deformity. Furthermore, radiation therapy adds the additional risk of radiation myelopathy.

When the neurological abnormality is secondary to kyphosis or anterior compression of the cord, embolization of the tumor, followed by resection of tumor and correction of the spinal deformity, appears to be an effective means of treatment.

References


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