Intraosseous glomus tumor of the spine

Case report and review of the literature

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The authors report a case of glomus tumor originating within the lumbar spine. Glomus tumors of intraosseous origin are rare, with the only case reported in the spine arising in the sacrum. The patient presented with the solitary complaint of radiating back pain that resolved postoperatively. The histopathological and radiographic findings are reviewed. To the authors’ knowledge, this represents the first case report of a glomus tumor of the spine originating above the sacrum.

Key Words • glomus tumor • lumbar spine • back pain

True glomus tumor should not be confused with the chromaffin cell–derived glomus jugulare and glomus vagale tumors that occur in the head and neck. The latter neoplasms are more correctly termed paragangliomas. Glomus tumors arise from neuromyoarterial glomus bodies where direct connections are present between preterminal arterioles and efferent veins. Glomus cells are modified smooth-muscle cells and function as part of this complex, which controls arteriovenous shunting and serves in thermoregulation. Glomus bodies may be found in many parts of the body but are most consistently noted in the subungual regions and in paracoccygeal soft tissue. Glomus tumors occur commonly in the distal extremities, especially in subungual areas. Paracoccygeal and other soft tissue locations have also been reported. Those originating in the soft tissues frequently erode adjacent bone. Rarely, they may originate intraosseously; several cases have been reported arising within a terminal phalanx, and one each in a middle phalanx, patella, ulna, and sacrum. The usual presentation is with pain that is sharp, paroxysmal, and radiating in nature. Symptoms may be intense and progressively worsen. Superficial lesions are typically exquisitely tender. The tumors are generally considered to be benign; complete excision is the treatment of choice. We report a case of an intraosseous glomus tumor arising in the lumbar spine.

Case Report

This 45-year-old woman was referred to our center for evaluation of a spinal lesion. She had a history of back pain for at least 4 years during which she had sought treatment from several practitioners. There was no history of trauma. The symptoms had not been ameliorated with exercise, chiropractic manipulation, or by the administration of nonsteroidal antiinflammatory drugs; however, narcotic analgesics provided moderate relief. Pain was characterized as excruciating and sharp. It was localized in the thoracolumbar junction on the right side and radiated across the midline, down into the low back, and, at times, into the legs.

Examination. The patient appeared somewhat anxious and was moderately overweight. She walked normally and had good range of motion in the thoracic and lumbar

Fig. 1. Plain x-ray film revealing a lytic, slightly expansile lesion in the right L-1 pedicle (arrowheads).
spine. There was no paraspinous spasm or local tenderness noted on palpation. Motor and sensory examinations were normal. Straight leg raising did not elicit any symptoms.

Imaging Studies. All studies were performed at an outside hospital. Plain x-ray films obtained several months prior to surgery revealed a lytic lesion with slight expansion of the right pedicle of the L-1 vertebra (Fig. 1). In retrospect, films obtained during chiropractic evaluation 4 years earlier also showed lytic changes in the pedicle that were less obvious. Although a bone scan showed no abnormality, computerized tomography scanning revealed a well-circumscribed lytic lesion of the right L-1 pedicle with surrounding sclerosis and slight expansion of the pedicle diameter (Fig. 2). Magnetic resonance (MR) imaging showed the lesion to be homogeneous (Fig. 3), having low signal intensity on T1-weighted imaging and brightly enhancing following gadolinium administration. The lesion showed high signal intensity on T2-weighted images.

Operation. Although the lesion was believed to be benign on the basis of the radiographic findings, the patient underwent surgical excision because of her intractable pain and the uncertainty of diagnosis. The T12–L1 zygapophyseal complex was exposed on the right. Access to the pedicle was achieved via removal of the right L-1 superior facet. Firm grayish-pink soft tissue was encoun-

![Fig. 2. Axial computerized tomography section showing the tumor to be lytic and well circumscribed. Surrounding bony sclerosis can be appreciated (black arrowheads). The mass is confined to the pedicle, but the medial wall is nearly deficient (white arrow).](image)

![Fig. 3. Magnetic resonance imaging revealing a homogeneous lesion in the right L-1 pedicle. Upper Left: The mass (black arrows) is of low signal intensity on T1-weighted images. Upper Right: Following gadolinium administration, the tumor enhances brightly (white arrows). Lower Left: Abnormal high signal intensity on T2-weighted images (white arrowheads) is limited by the tumor boundaries. Lower Right: An enhanced axial T1-weighted fat-suppressed image highlights the tumor (arrowheads).](image)
Pain is the most common complaint, usually sharp.1,20 When this pattern is observed in association with cavernous vascular channels resembling hemangiomas, the tumors are termed glomangiomatas.7 Rarely, a glomus tumor may contain bundles of smooth-muscle cells; the tumor is then designated a glomangiomyoma.2 Glomus cells express muscle-specific actins, but do not characteristically show immunoreactivity for S-100 protein.5,18 Immunoreactivity for substance P in nerve fibers within these tumors has been described and may be related to the unusual pain attributed to these lesions.9 The electron microscopic features of these tumors have also been described, and further support smooth-muscle lineage of the tumor cells.18,19 The tumor reported here exhibits the classic histology of glomus tumor, and the immunohistochemical studies performed confirm the diagnosis.

These lesions have a benign postoperative course when encountered in the usual locations. Excision of tumor involving bone is most commonly performed by curettage, with gross-total removal believed to be curative.13,20 Resection of significant uninvolved margins or amputation of digits is excessive. Although little is known about glomus tumors of spinal origin, the pathology remains the same and is quite benign in appearance. We therefore believe gross-total excision to be appropriate management for spinal lesions as well. There is no defined role for radiation therapy in the treatment of these lesions. Likewise, as glomus tumors are not usually highly vascular, embolization would not be indicated and would probably not be feasible.

Conclusions

This case meets the histological and clinical criteria of glomus tumor. Perhaps the presentation of the radiographic details of this case and the use of immunocytochemical studies will lead to increased recognition of this rare tumor type.

References

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