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# Glomus tumor of the mediastinum

Igor J Rychlik<sup>1</sup>, Mark E O'Donnell<sup>2,3</sup>, Philip Davey<sup>2</sup>,  
Reena Merard<sup>4</sup> and Jim McGuigan<sup>1</sup>

## Abstract

Glomus tumors are rare benign myoepithelial neoplasms that can present with intractable pain. We report the case of a 59-year-old gentleman who presented with upper abdominal and chest pain caused by a posterior mediastinal glomus tumor arising from the spinal column, which required surgical resection. As glomus tumors usually develop in the limbs, this case highlights the complexity of diagnosis and treatment of glomus tumors when they present in rare locations.

## Keywords

Glomus tumor, mediastinal neoplasms, vascular neoplasms

## Introduction

Glomus tumors or glomangiomas, first described in 1877, are rare benign neoplasms arising from the glomus body. These solitary and small, often painful skin lesions, usually present on the palm and sole. Noncutaneous manifestations affecting the fingernails, tympanic membrane, gastric antrum, or glans penis remain rare. Solitary glomus tumors are more common in females, while multiple lesions are slightly more common in males and tend to develop 10–15 years earlier than single lesions. The probable misdiagnosis of many of these lesions as hemangiomas or venous malformations contributes to the difficulty in determining their true incidence.

## Case report

A 59-year-old man presented to the emergency department complaining of nonspecific upper abdominal pain for 4 months. No other symptoms were associated with the pain. Clinical examination revealed no abnormalities, nor did initial investigations including full blood count, biochemistry, and radiographs of the chest and abdomen. The patient returned on multiple occasions with the same complaint, necessitating surgical admission. Computed tomography identified a lesion at the level of the 3rd thoracic vertebra (Figure 1). Magnetic resonance imaging revealed a 2-cm solid lesion in the posterior mediastinum at the level of T3, without evidence of intraspinal extension (Figure 2). The images were thought to represent a schwannoma due to the

complex nodular morphology. The patient was assessed by the neurosurgical team. A further magnetic resonance imaging scan of his brain and spinal cord, to investigate the presence of neurofibromatosis, was negative. He was treated conservatively with oral analgesia as required. One year later, he returned with severe chest pain. Clinical examination elicited back discomfort with focal tenderness adjacent to the spinous process at the 3rd thoracic vertebral level. Cardiology assessment including an echocardiogram, exercise stress test, and coronary angiography, did not identify a cardiac source for the patient's symptomatology. Although the pain was presumed musculoskeletal in origin, he was referred to the thoracic surgery team for consideration of surgical resection of the mediastinal lesion. As the lesion was considered to have a highly vascular nature, percutaneous histological sampling was avoided. Surgical excision via a right lateral thoracotomy revealed a well-circumscribed vascular lesion that was resected en bloc with macroscopically clear margins. The patient had an uneventful recovery and was

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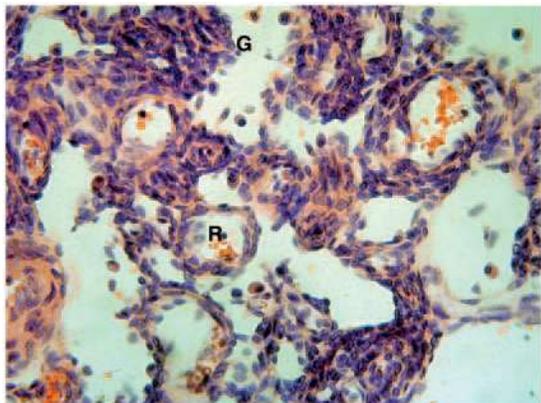
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**Figure 1.** Computed tomography scan of the glomus tumor (red arrow).



**Figure 2.** Magnetic resonance imaging of the tumor showing the nodular morphology (red arrow).



**Figure 3.** Histology of the specimen revealed small vascular channels with red cells within them (R). Other more solid cellular nodules are also seen; these are the glomus cells (G) that are part of the tumor. Hematoxylin and eosin stain, original magnification  $\times 40$ .

discharged home. His symptoms resolved completely. Pathological assessment of the tumor revealed a benign solid glomus tumor with clear resection margins (Figure 3). Following discussion at a thoracic multidisciplinary oncology meeting, no further adjuvant treatment was recommended. The patient remained symptom-free 12 months after surgery, with no evidence of local recurrence.

## Discussion

Glomus tumors are neoplasms arising from modified smooth muscle cells in specialized arteriovenous shunts (Sucquet-Hoyer canals) that are involved in the regulation of temperature and blood pressure. Although glomus tumors are generally benign, isolated cases of malignancy have been reported.<sup>1–3</sup> Histologically, these tumors consist of clusters of glomus cells arranged around the endothelium-lined vascular spaces. Depending on the main component, they can be subdivided into 3 categories: solid, glomangioma, or glomangiomyoma.<sup>3</sup> They may present as a solitary nodule or multiple tumors, which may be associated with an autosomal dominant mutation of the glomulin gene on chromosome 1p.<sup>4</sup>

Glomus tumors normally present in limb extremities, but can also present at a variety of locations including the pharynx, trachea, lung, esophagus and stomach. Clinically, glomus tumors present with a triad of features: pain, pinpoint tenderness, and hypersensitivity to cold temperatures, particularly in cutaneous lesions.<sup>1</sup> However, the definitive diagnosis remains challenging. Nonspecific symptoms and atypical distributions can lead to misdiagnosis and prolonged suffering for patients. Radiological imaging with ultrasonography may demonstrate well-defined oval hypoechoic lesions

with a characteristic vascular appearance on Doppler imaging.<sup>5</sup> Ultrasound sensitivity is highly operator-dependent. Magnetic resonance imaging has also been reported as a sensitive modality for the diagnosis of glomus tumors, with specificity estimated at 50%. It relies on the presence of characteristic flow void patterns within the tumor, a “salt and pepper” appearance; however, this is an inconsistent finding.<sup>6</sup> More recent studies have suggested that multidetector computed tomography angiography might be more valuable due to its improved vascular analysis, particularly during preoperative surgical excision planning.<sup>7</sup>

Surgical resection with macroscopically clear margins remains the mainstay of treatment. Benign lesions do not require adjuvant therapy or follow-up. Milia and colleagues<sup>2</sup> reported a successful outcome with combined radio- and chemotherapy in a case of malignant glomus tumor in a 40-year-old man presenting with a lesion in the upper cervical region. We would suggest the utilization of a thoracic oncology-pathology multidisciplinary team for decisions regarding the need for further treatment modalities.

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## Conflicts of interest statement

None declared.

## References

1. Schiefer TK, Parker WL, Anakwenze OA, Amadio PC, Inwards CY and Spinner RJ. Extradigital glomus tumors: a 20-year experience. *Mayo Clin Proc* 2006; 81: 1337–1344.
2. Milia ME, Turri L, Beldi D, Deantonio L, Pareschi R and Krenkli M. Multidisciplinary approach in the treatment of malignant paraganglioma of the glomus vagale: a case report. *Tumori* 2011; 97: 225–228.
3. Gombos Z and Zhang PJ. Glomus tumor [Review]. *Arch Pathol Lab Med* 2008; 132: 1448–4852.
4. Boon LM, Brouillard P, Irrthum A, et al. A gene for inherited cutaneous venous anomalies (“glomangiomas”) localizes to chromosome 1p 21–22. *Am J Hum Genet* 1999; 65: 125–133.
5. Park HJ, Jeon YH, Kim SS, et al. Gray-scale and color Doppler sonographic appearances of nonsubungual soft-tissue glomus tumors. *J Clin Ultrasound* 2011; 39: 305–309.
6. Noujaim SE, Pattekar MA, Cacciarelli A, Sanders WP and Wang AM. Paraganglioma of the temporal bone: role of magnetic resonance imaging versus computed tomography. *Top Magn Resonan Imaging* 2000; 11: 108–122.
7. Christie A and Teasdale E. A comparative review of multidetector CT angiography and MRI in the diagnosis of jugular foramen lesions. *Clin Radiol* 2010; 65: 213–217.