

Intramuscular Glomus Tumor of Foot Presenting as Neuroma of Sural Nerve: A Case Report

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Learning Point of the Article:

- Glomus tumors are frequently seen in subungual regions of hands
 - Foot and other regions are less commonly involved
- Classical triad of pain, cold hypersensitivity, and point tenderness gives a clue to diagnosis
 - MRI is the investigation of choice
 - Excision of tumor is curative

Abstract

Introduction: Glomus tumors are benign vascular hamartomas that lie in the reticular layer as an arteriovenous anastomosis in the dermis. A glomus tumor is usually located in the subungual region of the digits. They occur more often in the hand (75%) than elsewhere and are located beneath the fingernail in 25–65% of patients. Clinical and radiological (magnetic resonance imaging [MRI]) usually clinch the diagnosis in the majority of cases. Twenty-five percent are not subungual, however, and these may pose a difficult diagnostic problem.

Case Report: A 40-year-old male, a known case of cardiac disease with a pacemaker in situ, experiencing pain on the lateral aspect of the hindfoot following trauma, was diagnosed with soft tissue injury. The patient presented with persistence of pain and development of paresthesia as a new symptom over 1 year. The diagnosis of neuroma of the sural nerve was made on the premise of localized pain and paresthesia in a patient with a prior history of a blunt trauma, supported by ultrasonography. Intraoperatively, the nerve was found intact, and tumor tissue was located within the muscle, which was excised. Histopathology confirmed a glomus tumor. The patient was symptom-free on the immediate post-operative day.

Conclusion: Glomus tumor is a rare but important differential diagnosis for localized foot pain and must be evaluated with MRI. In cases where MRI is not feasible, the surgery must be performed keeping the option of vigilant tissue exploration to locate any lesion. Complete excision of the tumor is curative.

Keywords: Glomus tumor, foot pain, excision.

Introduction

Glomus tumors are benign hamartomas originating from the glomus body [1]. The glomus body is composed of vascular structures, nerve cells, and smooth muscle cells. It is found in the dermis throughout the body, with the highest concentrations

being in the hands and feet, especially in the fingertips and under the nail bed. The glomus body is responsible for thermoregulation. Glomus tumors are typically characterized by painful, subcutaneous nodules that are usually located in the subungual region of the digits [2]. Glomus tumors commonly

Author's Photo Gallery



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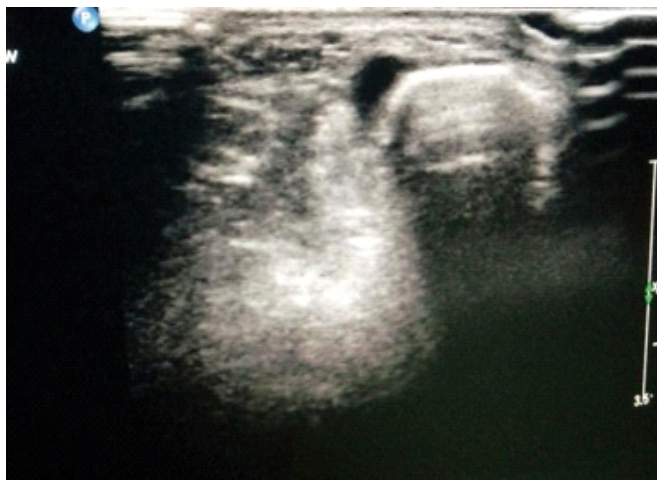


Figure 1: Ultrasonography of the lesion showing a hypointense oval shadow in the subcutaneous plane.



Figure 2: Henna (brown irregular line) applied to localize the lesion.

occur in middle age, especially in the fourth and fifth decades of life, with females affected more often than males [3]. Up to 75% of these lesions are found in the hand, and 65% are located in the fingertip. The apparatus itself consists of an afferent vessel, a Sucquet-Hoyer canal composed of a channel surrounded by large polygonal cells and multiple shunts. Histologic findings include endothelial pericytes and numerous non-myelinated nerve fibers. These findings explain the classic triad of symptoms seen: (1) Cold hypersensitivity, (2) paroxysmal pain, and (3) pinpoint pain.

Symptoms are remarkable in the severity of the sharp lancinating pain brought on by either cold exposure or even light touch. Physical examination is unremarkable in 50% of lesions; however, a localized bluish discoloration in the nail bed, with or without nail plate ridges, strongly suggests the diagnosis [4]. Radiological evaluation includes ultrasound and magnetic resonance imaging (MRI) [5]. Glomus tumors

appear as dark, well-delineated lesions on T1-weighted and bright on T2-weighted MRI. MRI has been successful at pinpointing lesions as small as 2 mm in the fingertip [6].

Treatment of symptomatic lesions is surgical excision. The rate of recurrence may be as high as 20%. If symptoms continue longer than 3 months after excision, the surgeon should strongly consider re-exploration because the incidence of multiple lesions is high [7].

The literature on glomus tumors in the hand is extensive, while those in the foot are sparse [8]. Trehan et al. in their literature reported glomus tumors in the subungual regions of the foot [9]. The presence of non-subungual lesions in the foot is remote, and they are found around the tip of toes. In this report, we describe the work-up, management, and recent concepts of a glomus tumor in a non-subungual location presenting as neuroma.



Figure 3: Intraoperative finding of an intramuscular pearly white lesion.



Figure 4: Completely excised lesion.

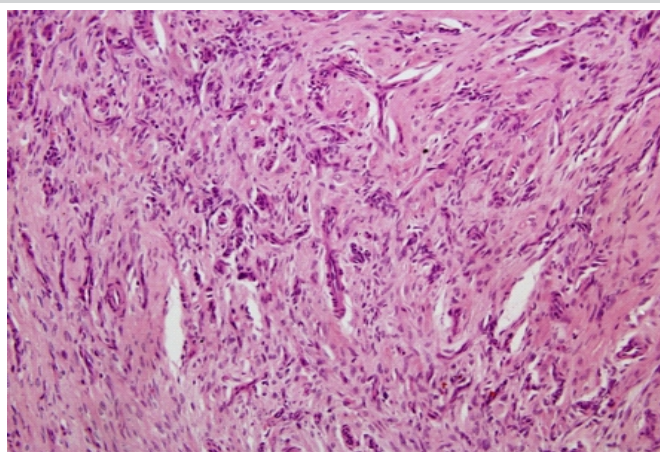


Figure 5: Blood vessels lined by endothelial cells with numerous glomus cells.

Case Report

A 40-year-old male patient presents with continuous dull aching pain and tingling sensation in the lateral aspect of the left foot for 1 year. There was a history of trauma (twist injury of foot). Conservative management with Compression bandage, Ice packs, and pain medications was prescribed. Patient developed paresthesia over the lateral aspect of the hindfoot with persistent pain increasing in severity when the patient wore footwear. Patient was a known case of cardiac disease with pacemaker in situ.

Clinical examination

There was no visible swelling in the foot. A localized tenderness was found on the lateral border of the hindfoot. On tapping, there was a tingling sensation noticed by the patient, which was also painful. There was no distal motor or sensory loss. However, paresthesia was present in the affected area.

Radiological evaluation

Ultrasound examination of the suspected lesion showed a well-defined lesion in the subcutaneous plane, probably a neuroma of the branch of the sural nerve (Fig. 1). MRI could not be done due to a cardiac pacemaker.

Treatment

Henna was used under ultrasound guidance to localize the lesion pre-operatively (Fig. 2). Surgical exploration showed an intact branch of the sural nerve. Further exploration of the underlying muscle revealed a pearly white, approximately 0.5 × 1 cm² lesion which was excised and sent for biopsy (Fig. 3 and 4). Histopathology revealed blood vessels with numerous glomus cells, which are round to oval with acidophilic

cytoplasm. Immunohistochemistry showed positivity of smooth muscle actin in glomus cells. These features are consistent with glomus tumor (Fig. 5 and 6). The patient was symptom-free with no signs of recurrence after 1 year.

Discussion

Glomus tumors are rare benign soft tissue tumors that arise from the glomus body. Glomus tumors are most commonly found in distal extremities in the nail bed and account for 1–5% of all soft tissue tumors of the hand and foot. About 75% of glomus tumors occur in the hand, and 60% are subungual [1]. Other sites include the wrist, forearm, and foot, but the tumor can occur anywhere in the body. Glomus tumors have also been described at unusual sites, such as the wrist, forearm, foot, bone, eyelid, colon, rectum, kidney, and cervix. Intramuscular glomus tumors are very rare and present a diagnostic challenge [2]. We report a case of an intramuscular glomus tumor in the lateral aspect of the hindfoot presenting as a neuroma.

Pain, cold sensitivity, and point tenderness are the characteristic triad of symptoms of a glomus tumor. Clinical examination should include the Love test – Direct pressure on the tumor by a small, firm object, such as a pinhead, causes excruciating pain, whereas pressure applied slightly to one side of it elicits no pain. The cold test – Immersing the involved hand or digit in ice water also causes discomfort. The Hildreth test – The induction of transient ischemia to the affected area with use of a tourniquet. A reduction of pain should be noted upon induction of ischemia, with a sudden return of pain to the affected area with release of the tourniquet [10].

The clinical presentation of subungual glomus tumors is classical as described above. However, when presented in other locations, the clinical presentation has variances. In our case, the triad was not found and hence posed a difficulty in diagnosis. MRI and bone scans may prove helpful in diagnosing these

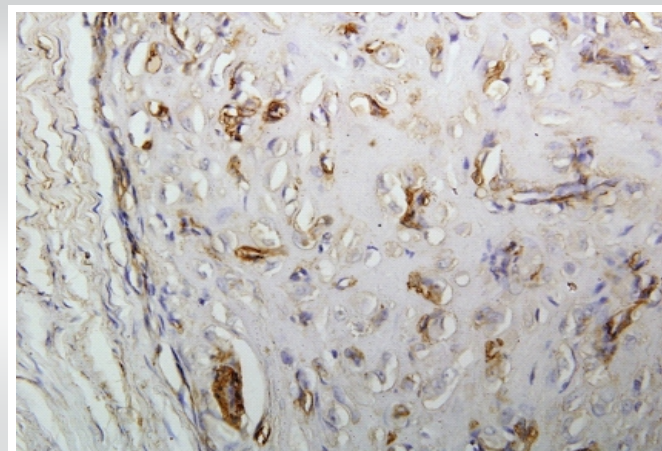


Figure 6: Immunohistochemistry showing positivity of smooth muscle actin in glomus cells.

tumors.

MRI is considered to be the imaging modality of choice for glomus tumors. MRI has been reported to detect glomus tumors as small as 2 mm in diameter. Glomus tumors have the appearance of a high signal central dot surrounded by a zone of low signal intensity. They have low signal intensity on T1-weighted images and marked hyperintensity on T2-weighted images [11]. In our case, MRI could not be done due to a cardiac pacemaker, and hence, the diagnosis of neuroma based on ultrasonography was clinically correlated and surgery performed.

Glomus tumors can be removed with the patient under local anesthesia and should be accurately localized by marking the lesion under ultrasonography guidance just before surgery [12]. Meticulous and complete excision of the usually well-encapsulated lesions is curative. Recurrence of symptoms should raise the suspicion of residual tumor or multiple tumors. After surgery, our patient was relieved of symptoms. Non-operative treatments, such as sclerotherapy and Laser therapy, with suboptimal to good outcomes are documented in the literature, especially for those in non-subungual locations [13]. A larger study needs to be done before this modality is advocated.

Finally, histopathology is the gold standard. Biopsy of the

lesion revealed a glomus tumor. Glomus cells are specialized peri-vascular muscle cells that are round or cuboidal “epithelioid” cells with perfectly round nuclei and have acidophilic cytoplasm. Non-myelinated nerve fibers, which are intermixed with thick-walled capillaries, are responsible for the lancinating pain.

Conclusion

Glomus tumor is an important differential diagnosis for localized foot pain and must be evaluated with MRI. Non-subungual location and non-classical triad of symptoms may lead to misdiagnosis of the lesion. In cases where MRI is not feasible, the surgery must be performed, keeping the option of vigilant tissue exploration to locate any lesion. Complete excision of the tumor is curative.

Clinical Message

Glomus tumor presents most frequently in the subungual regions of the hand. The foot is rather a rare location. The pathognomonic triad of pain, cold hypersensitivity, and point tenderness may be absent in locations other than subungual regions. MRI must be included in evaluation. Surgical exploration and complete excision are essential for symptom relief.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

References

1. Altarifi ME, Kalas A, Alnajjar A, Yasin Dali M, Alkhowailed MS. Glomus tumor: A rare differential diagnosis for subungual lesions. *Radiol Case Rep* 2024;19:6034-8.
2. Stewart DR, Sloan JL, Yao L, Mannes AJ, Moshedy A, Lee CC, et al. Diagnosis, management, and complications of glomus tumours of the digits in neurofibromatosis type 1. *J Med Genet* 2010;47:525-32.
3. Seo JH, Lee HS, Kim SW, Jeong JJ, Choi YR. Subungual glomus cell proliferation in the toe: A case report. *J Foot Ankle Surg* 2014;53:628-30.
4. El Jouari O, Gallouj S, Elloudi S, Senhaji G, Rimani M, Mernissi FZ. A painless glomus tumor: A case report. *J Med Case Rep* 2018;12:302.
5. Del Carpio GS, Burgos EM, Kreilinger JJ, Taboada DB, Pensado MP, Tapia Viñe M, et al. Case series of extradigital glomus tumors: Imaging findings, differential diagnosis and radiologic-pathologic correlation. *Egypt J Radiol Nucl Med* 2024;55:10.
6. Kim SW, Jung SN. Glomus tumour within digital nerve: A case report. *J Plast Reconstr Aesthet Surg* 2011;64:958-60.
7. Jalan D, Elhence A, Rathore DS, Maley DK. A recurred subungual glomus tumour of the thumb. *BMJ Case Rep* 2016;2016:bcr2015212963.
8. Workman M, Saragas N, Ferrao P. Glomus tumors in the foot. *J Foot Ankle* 2020;14:183-6.
9. Trehan SK, Soukup DS, Mintz DN, Perino G, Ellis SJ.



Glomus tumors in the foot: Case series. Foot Ankle Spec 2015;8:460-5.

10. Patel NA, Hulst Z, Dehner C, Blacklidge D. Symptomatic glomus tumor in the foot: A case report. Foot Ankle Surg: Tech Rep Cases 2024;4:100360.

11. Baek HJ, Lee SJ, Cho KH, Choo HJ, Lee SM, Lee YH, et al. Subungual tumors: Clinicopathologic correlation with US and MR imaging findings. Radiographics 2010;3:1621-36.

12. Chen SH, Chen YL, Cheng MH, Yeow KM, Chen HC, Wei FC. The use of ultrasonography in preoperative localization of digital glomus tumors. Plast Reconstr Surg 2003;112:115-9, discussion 120.

13. Barnes L, Estes SA. Laser treatment of hereditary multiple glomus tumors. J Dermatol Surg Oncol 1986;12:912-5.

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