



Extradigital Painful Glomus Tumour of Heel Pad

Balaji Zacharia¹ · Karthikeyan Manickam¹ · Dhyaneswaran Subramanyam¹

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Introduction

Glomus tumour is a benign neoplasm that arises from neuromyoarterial glomus bodies [1]. It is a very rare tumour, accounting for only 2% of all soft tissue tumours [2]. The commonest site is subungual region of digits. Extradigital sites commonly seen are hand, wrist, forearm, coccyx, colon, mediastinum, eyelids and stomach, where there are well-defined glomus bodies [1–3].

We all can get blind sided by common diseases that present oddly. There can be difficulties in diagnosis of a typical manifestation of an uncommon disease. Similarly an uncommon manifestation of a common disease is also a diagnostic challenge. Heel pain is a common problem encountered by most of us. Here we are presenting an uncommon disease in an unusual location. Glomus tumour of heel, producing heel pain, is rare. Only three cases were reported in English literature. We are presenting the fourth case of glomus tumour of heel from our institution.

Case Presentation

A 16-year-old boy was presented with 1-year history of painful left heel and limping of the left leg for 1 year. He underwent various modes of treatment including analgesics, local injections and acupuncture. At the time of presentation, he had antalgic gait. There was a purple-coloured swelling on

the left heel. There was no blanching on deep pressure. There was severe point tenderness on palpation. There was no history of previous trauma or infection in that region.

Investigations

Haemogram and other laboratory investigations were normal. There were no significant abnormalities detected in the radiograph of the foot and computerised tomography. MRI of foot showed relatively well-defined T2 hyper intense lesion in the subcutaneous tissue of the left heel. The lesion was about 15 × 15 mm in size (Fig. 1). We did an excision biopsy. Intraoperatively there was a purple-coloured well-defined swelling of 15 × 15 mm size in the left heel (Fig. 2). Biopsy specimen was sent for the histopathological examination. Gross examination showed a well-circumscribed soft grey-white lesion, measuring 4 × 3 × 2 mm. Histopathology showed highly vascular tumour with a smaller number of glomus cells between blood vessels. There were sheets and nested pattern of glomus cells in the lesion, which were monotonous cells with pale cytoplasm and round nucleus (Fig. 3).

Differential Diagnosis

- Plantar fasciitis
- Foreign body granuloma
- Haemangioma
- Haematoma heel

Treatment Excision.

Follow-up

Postoperatively, the wound healed without any complications. Patient got full symptomatic relief. Follow-up was done for 2 years; there was no recurrence of lesion.

✉ Balaji Zacharia
balaji.zacharia@gmail.com

Karthikeyan Manickam
karthik490@gmail.com

Dhyaneswaran Subramanyam
dhiyane.mmc@gmail.com

¹ Dept. Of Orthopedics, Govt. Medical College,
Kozhikkode, Kerala PIN-673008, India



Fig. 1 Intraoperatively, there was a purple-coloured well-defined swelling of 15 × 15 mm size in left heel

Discussion

Glomus tumour is a rare benign neoplasm arising from the glomus body [1]. Glomus tumour is often highly vascular tumour of small uniform specialised smooth muscle cells resembling smooth muscle component of a vascular glomus body [3]. It is commonly seen in the 4th to 5th decades but can occur between 2nd to 7th decades. It is more common in females (3:1). The characteristic features of glomus tumour include triad of localised point tenderness, severe intermittent pain described as burning or bursting pain and cold sensitivity [4]. These tumours usually present as painful, firm, purplish, solitary subcutaneous nodule. Tumours in lower extremity can have size more than 2 cm [5]. There are many causes for heel pain. Most common misdiagnosis in any case of heel pain is plantar fasciitis. The common causes of heel pain include thorn prick, corn and plantar fasciitis. The cardinal clinical feature of plantar fasciitis is pain in the heel which is aggravated



Fig. 2 MRI of foot showed relatively well-defined lesion in subcutaneous tissue in left heel in T1- and T2-weighted image

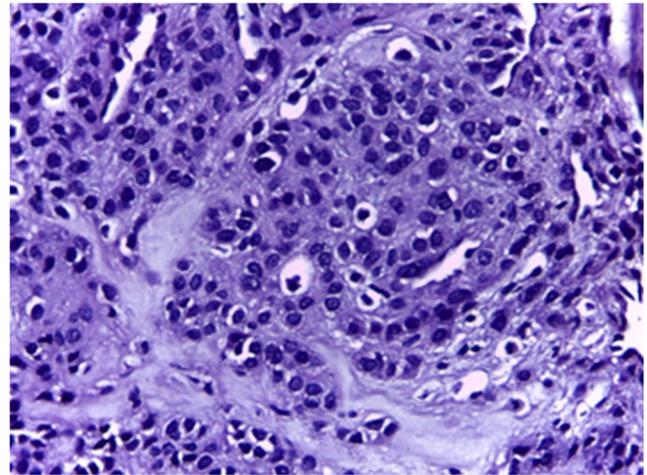


Fig. 3 Histopathology of lesion showing monotonous cells with pale cytoplasm and round nucleus with dilated, cavernous-like, thin-walled vascular spaces surrounded by glomus cells (× 10)

following activity after rest. It is due to either a bony spur or inflammation at the attachment site of plantar fascia. Osteomyelitis of the calcaneum is a cause for heel pain, especially in children. Stress fracture of calcaneum produces heel pain in newly recruited army personnel. Osteochondritis of calcaneal apophysis (Sever's disease), lateral tarsal tunnel syndrome and compressive neuropathy of plantar nerve can rarely produce heel pain [6]. The imaging features of glomus tumours are similar to those of haemangioma in the subungual region and are often not recognized preoperatively. The colour Doppler imaging of glomus tumour shows hypervascularity of the lesion due to high-velocity flow in the intra-tumoural shunt vessels—a finding that is specific for the diagnosis [7], intermediate or low signal intensity on T1-weighted images and marked hyper intensity on T2-weighted images with strong enhancement after the injection of gadolinium-based contrast material MRI [8]. MR angiography is a useful non-invasive adjunct to conventional MR imaging for establishing the diagnosis of a glomus tumour. Typical MR angiographic findings include areas of strong enhancement in the arterial phase and tumour blush, which increases in size in the delayed phase [7–9, and]. It is difficult to diagnose extremity glomus tumours with fine needle biopsy due to haemorrhagic tap and paucicellularity. Histopathology is the gold standard investigation to diagnose glomus tumours [10]. H&E staining shows the lesion composed of sheets of uniform cells with a small amount of eosinophilic cytoplasm, well-defined cell margins, and round or ovoid punched-out central nuclei. There are dilated, cavernous-like, thin-walled vascular spaces surrounded by glomus cells [11]. Differential diagnosis includes a neural tumour such as a neurofibroma, vascular tumour including haemangioma, angioma, or haemangiopericytoma, plantar fasciitis, leiomyoma or metastasis [12]. A glomus tumour should be considered in the differential diagnosis of any painful soft tissue mass [13]. The first description of glomus tumour of the

heel was in a 30-year-old male who complained of pain in the right heel for 5 years. He went to many physicians and underwent many types of treatment including Butazolidine, arch support, injection of local anaesthetic and steroid and operative exploration of tarsal tunnel. The diagnosis like plantar fasciitis and tarsal tunnel syndrome was considered in that patient. Clinically there was only point tenderness on the lateral aspect of the heel [14]. In yet another case, a 15-year-old boy presented with hypoplasia of thigh and calf, which was diagnosed as spastic monoplegia. At the age of 7, he had a bluish nodule on the medial aspect of calcaneum and diagnosed to be glomus tumour heel [15]. Compared with these cases, our case presented with pain in the left heel with limping, for 1 year. Clinically there was point tenderness and a purple-coloured area in the heel. Like the first case, he was diagnosed as plantar fasciitis and was treated for the same. There was no hypoplasia of any part of the lower limb as seen in the second case.

Treatment of choice for a glomus tumour is complete surgical excision. There are also reports of alternative treatment such as sclerotherapy with sodium tetradecylsulfate, polidocanol and hypertonic saline. Ablative therapy with argon laser, carbon dioxide and ethanol are also useful [8].

Conclusion

The diagnosis of extradigital glomus tumours remains a challenge. Their unusual location and nonspecific clinical findings, except for pain, make the diagnosis difficult. Therefore, history, clinical and proper radiological examinations and high index of suspicion are essential for the diagnosis. We think that this case report will help all of us to include glomus tumour as a rare possibility in the differential diagnosis of recalcitrant heel pain.

Contributions All authors helped in collecting data, analysis, writing and editing the manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interests.

Informed Consent Consent was taken from the patient.

Ethical Approval This article is not based on any studies involving animals.

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