

Case Report

A Painful Glomus Tumor on the Pulp of the Distal Phalanx

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A 52-year-old female patient presented with an 8-year history of progressively intense pain, cold sensitivity, and severe tenderness to palpation of the ulnar side of the tip of her right little finger. Subsequent diagnostic evaluation with ultrasonographic imaging revealed the presence of a glomus tumor in the tender area. Glomus tumors are benign, occurring in the vascular hamartomatous tubercles of the glomus body, which is a myoarterial apparatus typically found in the reticular dermis of the skin. Distal glomus tumors are relatively uncommon, and account for approximately 1% of all hand tumors. Most of them are located in the subungual area because of its high concentration of glomus bodies. We report a case of a glomus tumor with a typical triad of symptoms, yet with a rare location : on the pulp of the ulnar aspect of the distal phalanx of the right little finger.

KEY WORDS : Glomus tumor · Finger · Pain.

INTRODUCTION

Wood first described glomus tumors in 1812 as painful subcutaneous tubercles, and Masson described its histological appearance in 1924⁸⁾. These are benign tumors that arise from one of the subcutaneous glomus bodies. These myoarterial apparatus structures normally regulate skin temperature. Digital glomus tumors are relatively uncommon. These account for approximately 1% of all hand tumors and occur more commonly in women²⁾. Their most common location is the subungual region of the digits. About 10% of these tumors occur on the pulp of the distal phalanx¹⁻²⁾. We report the rare case of a glomus tumor located in an uncommon location, with the patient presenting a typical triad of symptoms.

CASE REPORT

A 52-year-old female patient presented with an 8-year history of progressively intense pain, cold sensitivity, and

severe tenderness to palpation of the ulnar side of the tip of her right little finger. She had no gross abnormalities of her fingers, and no previous trauma history. We performed Love's pin test, Hildreth's test, and a cold sensitivity test. The point tenderness was localized on her right little finger, which was determined by pressing the head of a pin against the tender lesion. After a tourniquet was applied to the base of the digit, the pin test was repeated at which localized tender point. And then, she presented no pain at the point. The pain increased when her digit was exposed to cold. Ultrasonographic imaging showed a mass in the tender area (Fig. 1). At surgery, a blue-red 3 mm diameter tumor was exposed through a paramedian volar incision of the pulp of the distal phalanx of the right little finger (Fig. 2). It was removed completely, and histological examination confirmed a glomus tumor (Fig. 3). Her symptoms terminated immediately after the operation

DISCUSSION

Glomus tumors are benign hamartomas that arise from the normal glomus apparatus, located in subcutaneous tissue. The normal glomus body is a contractile neuromyoarterial receptor that controls blood pressure and temperature by regulating flow in the cutaneous microvasculature⁶⁾. Glomus

• Received : April 22, 2010 • Revised : May 10, 2010
• Accepted : August 3, 2010
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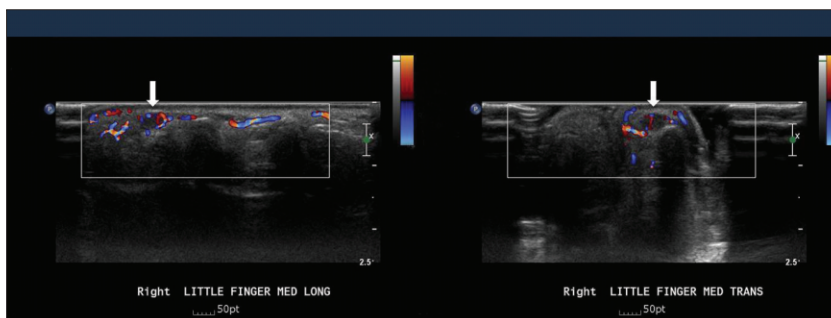


Fig. 1. Longitudinal (right) and transverse (left) ultrasonograms of the right little finger show markedly hypoechoic about 4 × 6 mm sized mass-like lesion in the ulnar aspect of distal phalanx. Color doppler shows hypervascular mass.

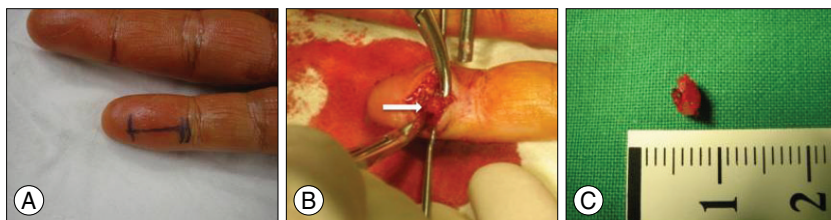


Fig. 2. Preoperative and intraoperative photographs views of the lesion. A : Incision was made on the painful lesion after Love's pin test. B : The arrow point to the glomus tumor in its in situ location. The glomus tumor is in the pulp of the distal phalanx of right little finger. C : Gross appearance of the excised tumor.

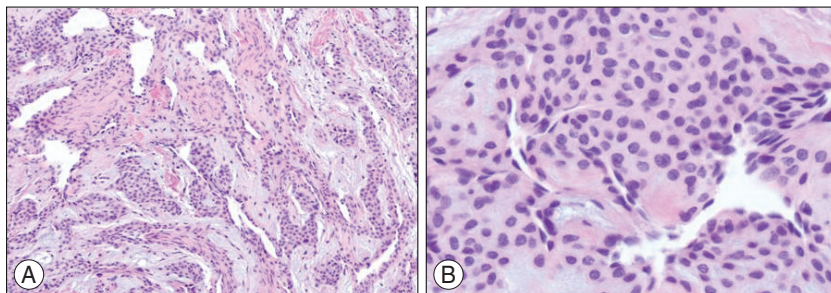


Fig. 3. Histological sections of the tumor. A : The section demonstrates blood vessels surrounded by a proliferation of round cells in a fibrous stroma (H & E, ×100). B : The tumor is composed of multiple vascular channels lined by endothelial cells and aggregates of round cells with darkly staining round to ovoid nuclei and eosinophilic cytoplasm (H & E, ×400).

bodies are highly concentrated in the tips of digits, especially under the nail. So, the tumors are usually in the subungual area⁹⁾. The glomus tumor being located in the volar pulp of the distal phalanx is very rare.

Many articles about this tumor have noted that the long duration of symptoms before correct diagnosis and treatment is caused by the tumors being small and usually not palpable, and varying in presentation^{2,6-8)}. Importantly, the diagnosis of the glomus tumor must be made through the history and clinical examination of the patients. One of the distinguishing features of the glomus tumor is the classic triad of symptoms : hypersensitivity to cold, paroxysmal severe pain, and point tenderness in the finger. There are three main clinical diagnostic tests. The first is Love's pin test, in which the head of a pin is pressed gently against the tender lesion to localize

the pain. The second is Hildreth's test. After the patient feels severe pain, a tourniquet is applied to the base of the digit and Love's pin test is repeated. For a positive result, the patient should not experience any pain. The last test is a cold sensitivity test that produces increased pain when the finger is exposed to cold. In addition to these clinical tests, ultrasonographic imaging and magnetic resonance imaging (MRI) can be a valuable method of imaging glomus tumors^{3,6)}.

The treatment for glomus tumors is surgical total excision. Complete excision is curative and necessary to avoid recurrence. The incidence of recurrence after surgery has been reported in the range of 5-50%^{2,5,8,9)}. The standard approach is direct transungual excision : the nail plate is removed and the incision is made on the nail bed. It can afford a better exposure for completely subungual lesions^{5,8)}. An alternate approach is through a lateral incision. The incision allows exposure to the dorsal distal phalanx without violating the nail matrix, so reducing the risk of postoperative nail deformity⁹⁾. However, the lateral approach affords a more narrow view of the tumor bed, with a higher chance of incomplete excision, compared to the transungual approach⁴⁾. In our case, the lateral approach was enough for complete excision because the

lesion was located in volar pulp.

CONCLUSION

We report a rare case of a glomus tumor at an unusual site, the pulp of the finger, with long-term severe pain, cold sensitivity, and point tenderness. Glomus tumors are difficult to diagnose, particularly since they are often small and situated deep in the fingertip. Yet, awareness of the diagnosis is emphasized to prevent unnecessary delay in treatment. If a patient presents with a typical triad of symptoms on the fingertip, the glomus tumor should be considered for the differential diagnosis. In addition, ultrasonography or an MRI scan should be performed to ensure proper diagnosis and treatment. Finally, complete surgical excision should be consi-

dered as the curative treatment of choice for glomus tumors.

References

1. Bhaskaranand K, Navadgi BC : Glomus tumour of the hand. *J Hand Surg Br* 27 : 229-231, 2002
2. Carroll RE, Berman AT : Glomus tumors of the hand : review of the literature and report on twenty-eight cases. *J Bone Joint Surg Am* 54 : 691-703, 1972
3. Fornage BD : Glomus tumors in the fingers : diagnosis with US. *Radiology* 167 : 183-185, 1988
4. Heim U, Hänggi W : Subungual glomus tumors. Value of the direct dorsal approach. *Ann Chir Main* 4 : 51-54, 1985
5. Kale SS, Rao VK, Bentz ML : Glomus tumor of the index finger. *J Craniofac Surg* 17 : 801-804, 2006
6. Sorene ED, Goodwin DR : Magnetic resonance imaging of a tiny glomus tumour of the fingertip : a case report. *Scand J Plast Reconstr Surg Hand Surg* 35 : 429-431, 2001
7. Tomak Y, Akcay I, Dabak N, Eroglu L : Subungual glomus tumours of the hand : diagnosis and treatment of 14 cases. *Scand J Plast Reconstr Surg Hand Surg* 37 : 121-124, 2003
8. Van Geertruyden J, Lorea P, Goldschmidt D, de Fontaine S, Schuind F, Kinnen L, et al. : Glomus tumours of the hand. A retrospective study of 51 cases. *J Hand Surg Br* 21 : 257-260, 1996
9. Vasisht B, Watson HK, Joseph E, Lionelli GT : Digital glomus tumors : a 29-year experience with a lateral subperiosteal approach. *Plast Reconstr Surg* 114 : 1486-1489, 2004