

## Love sign's love for glomus tumor

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### ABSTRACT

Glomus tumors are rare benign painful tumors, which arise from the glomus body. The diagnosis is established with a detailed history and a bunch of efficient clinical tests, which are more beneficial than the radiological investigations. The surgical removal of the tumor is the mainstay of treatment. We present here a case of glomus tumor of right thumb suffering from agonizing paroxysms of pain since the last ten years, which was diagnosed clinically, whose tumor was surgically removed after localizing it with the love's pin test.

**Key words:** *Glomus tumor, Love's pin test, Love's sign, Hildreth's test*

### Introduction

Glomus tumors, which are in hand, are very rare benign painful hamartomas of vascular origin, which are seen only in 1-5% of the population [1]. Diagnosis of glomus tumors is usually based on detailed history and clinical examination. Although these tumors can arise anywhere in the body, they tend to do so in the upper extremity in the subungual region. They are present usually with a long history and classical clinical triads of paroxysms of excruciating pain, intolerance to extreme temperatures, and point tenderness.

A battery of clinical tests help in reaching accurate diagnoses such as the love's pin test, Hildreth's test, cold sensitivity test, and pink glow signs. Radiologic investigations like X-ray, USG, and MRI are helpful in

only one-third of cases. The mainstay of the treatment is surgical removal of the tumor by transungual or periungual (lateroungual or laterodigital Keyser-Littler) approach.

### Case Report

A young gentleman, who was 32 years of age, came to the outpatient department with a history of agonizing attacks of pain in his right thumb for ten years. The pain was excruciating and aggravated by touching and on contact with cold objects. For the last ten years the patient had taken consultations from various physicians but all in vain. Examination revealed extreme point tenderness on palpation and increase of pain on application of ice on the lateral aspect of the right thumb.

The patient had no systemic complaints. The pro-

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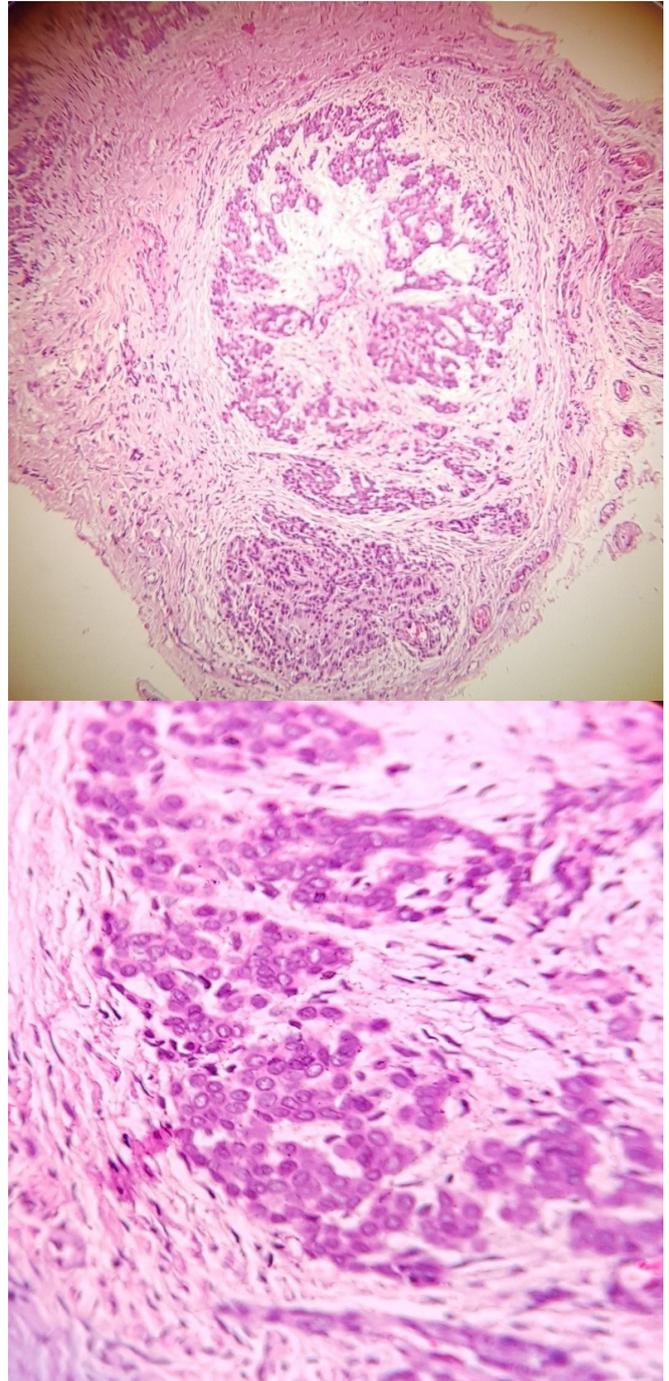
**Figure 1.** Glomus tumor right thumb.

visional diagnosis of glomus tumor of right thumb was made clinically, and the patient was subjected to USG Doppler and MRI of the right hand. Both the investigations could not localize the tumor. The patient was planned for exploration on high clinical suspicion, and the site of the tumor was localized with loves pin test to be at the lateral aspect of the thumb of right hand one centimeter above the nail bed.

Under local anesthesia and after removing the nail from the lateral aspect of his right thumb, a 0.2 x 0.2-centimeter brownish tumor was shelled out (Figure 1). The patient was discharged on the same day, and the histology report was suggestive of cells arranged in a trabecular and organoid pattern, with tiny vessels in a myxoid stroma, cells having rounded nuclei and a moderate amount of eosinophilic cytoplasm consistent with features of glomus tumor (Figure 2). At his follow-up appointment, the patient was doing well and was relieved of bouts of pain for the first time in ten years.

### Discussion

Glomus tumors are rare, painful, benign tumors arising from the glomus body or neuromyoarterial glomus. Woods, in 1892, was the first to describe glomus tumor as painful subcutaneous tubercles [2]. Masson, in 1924 was the first to describe its pathological findings, and in 1972, Martorrel was the one who classified it as a glomangioma or glomus tumor [2-4]. Neuro-



**Figure 2.** Microscopic description of glomus tumor.

myoarterial glomus or the glomus body is found in the reticular layer of the dermis. It is a specialized arteriovenous anastomosis functioning without an intermediary capillary bed, which is surrounded by a capsule of connective tissue structures called Sucquet-Hoyer canals, responsible for regulation of temperature [2].

The precise etiology of the glomus tumor is not known; however, it has been hypothesized that the structural weakness in the neuromyoarterial glomus may lead to reactive hypertrophy following trauma or it may represent hamartomas, in which individuals' components are hypertrophied [5]. Glomus tumors are most commonly seen in the third and fifth decade, with females being affected four times more than the males [6]. Glomus tumors, according to the clinical classification, are categorized into solitary or multiple types. Solitary glomus tumors are usually found in the extremities and are painful, whereas multiple glomus tumors can be seen anywhere in the body and are painless [7].

The most common site of glomus tumors is the hand, specifically in the subungual region, the lateral aspect of the digit and the palms. Macroscopically, these tumors are soft masses less than a centimeter and pink or purple in color [8]. Microscopically, they are made up of glomus cells, vascular cells, and smooth muscle cells

Glomus tumors are present mostly with a long history and classical clinical triads of paroxysms of agonizing or excruciating pain, intolerance to temperatures, and point tenderness. Sensitivity to touch is most common and seen in all patients, pain is seen in 80%, intolerance to cold is experienced in 63% and discoloration and nail deformity is seen in one-third of patients [8]. It is most of the times confused with chronic paronychia, neuroma, angioma, vascular myoma, melanoma, eccrine spiradenoma, radiculitis, cavernous hemangioma, arthritis, subungual exostosis, nodular hidradenoma, Raynaud's phenomenon or conversion reaction [9].

A battery of efficient clinical tests, such as the Love's pin test, Hildreth's test, cold insensitivity test, and pink glow sign, are the backbone for the accurate diagnosis of the glomus tumor. According to Bhaskaranand, Navadgi's series of 18 patients, Love's test was 100% sensitive and 78% accurate, while Hildreth's test was 71.4% sensitive, 100% specific and 78% accurate [10].

Loves' sign refers to severely localized tenderness elicited on application of pinhead, ballpoint pen, paper clip or any similar sharp object over the nail or skin and relief of pain on removal of pressure. Hildreth's test is done by elevating patients arm to exsanguinate it then a tourniquet is inflated to 250 mm of Hg, and the tumor is palpated, there is reduction in pain and tenderness. The test is positive when patient experiences pain and tenderness on releasing the cuff. The cold insensitivity test is deemed positive if on application of ice or immersion of the hand in cold water severe pain is elicited around the lesion [2,10,11]. Pink glow sign is a new sign, which uses a video dermascope having white light, polarized light and ultraviolet light to localize glomus tumor that shows a pinkish glow [12].

Various radiological modalities are used in detecting the glomus tumors these include X-ray, USG, and MRI. X-rays may show erosion or thinning of the underlying bones, especially when the tumors are big. However it is seen only in 30% to 60% of cases [5]. USG is also being used to preoperatively localize the glomus tumor, but it is of limited value in small tumors [5]. Among these MRI is the most useful for preoperative localization of the glomus tumor, which can detect tumors as small as 2 mm.

The tumor appears hypointense on T1 and hyperintense on T2 images and enhances markedly on administration of contrast. Characteristic of a glomus tumor is a nidus appearance with a high signal central dot surrounded by a zone of less signal intensity. In a series of 42 patients, Al-Qattan et al., have reported the sensitivity of 90% and positive predictive value of 97% however; the specificity was only 50% and the negative predictive value 20% [13].

The mainstay of the treatment is surgical removal of the tumor by transungual or periungual (lateroun-gual or laterodigital Keyser-Littler) approach. Preoperative localization of the tumor clinically or radiologically aids in deciding the better approach of removal. The transungual approach seems to have better access to the

lesion and helps in complete removal of the tumor. It is also helpful in cases where the tumor has not been preoperatively localized [14].

Major concerns of the surgery are recurrence of symptoms and deformity of the nails. Deformity of the nails is seen more in the transungual approach rather than in the lateral. Recurrence is usually the result of incomplete removal or due to multiple glomus tumors. Sometimes additional curettage is helpful in removing the remaining tissue after excision [2,14].

### Conclusion

Glomus tumors are a rare, painful, benign condition with unusually high morbidity until it is diagnosed and dealt with surgically. Patients usually suffer for long galling periods, and it often takes many consultations before the proper diagnosis is established. Newer modalities like high-frequency ultrasonography and high-resolution MRI may aid in diagnosing and localization of the tumor but not always. It is diagnosed clinically, and the love's pin test has a major role in diagnosing and localizing the tumor for deciding an appropriate strategy of management.

### Conflict of interest statement

The authors have no conflicts of interest to declare.

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