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Case Report

Glomus Tumor on the Volar Aspect of the Distal Phalanx, an Unusual Presentation for an Unusual Neoplasm: A Case Report

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Abstract

Background: In the fingertips, the glomus tumors usually involve the subungual areas with typical triad symptoms including pain, tenderness to palpation, and cold sensitivity. The glomus tumor of volar aspect of digits is rare.
Case Presentation: A case of glomus tumor was presented at the volar side of the distal phalanx of the ring finger of a 52-year-old woman. The tumor was painful and tender to palpation, yet insensitive to cold. The atypical location and insensitivity to cold led to a 4-year delay in diagnosis. After the surgical excision of the lesion, the extracted mass was sent for histologic evaluation and the diagnosis of glomus tumor was confirmed. One-year follow-up of the patient was event-free.
Conclusions: Atypical glomus tumor should be considered in the differential diagnosis of finger pain, even in the absence of characteristic diagnostic features.

Keywords: Glomus Tumor; Finger Phalanges; Differential Diagnosis

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Background

Glomus bodies are neuromyoarterial structures found in the dermis all over the body, particularly around the subungual area of the fingertips. They are responsible for the blood flow and thermoregulation of the skin (1). Glomus tumor was first described by Masson in 1924 (2). Thereafter, glomus tumors were found to constitute almost 1.6% of all soft tissue tumors and 1.0%-4.5% of the upper extremity tumors (3). If the tumors are presented at their typical locations such as the subungual areas and with their typical characteristics including pain, tenderness to palpation, and hypersensitivity to cold, their diagnosis could be less challenging. Yet, in nearly 10 percent of the cases, the tumor is located in atypical locations or presented with atypical symptoms, which complicates the diagnosis and results in persistent pain and symptoms (4, 5). More reports of atypical glomus tumors help easier diagnosis of the similar cases.

The glomus tumor of the fingertips usually presents at the subungual area (4) and glomus tumor of the volar pulp has been infrequently reported. In this report, we present a case of glomus tumor located at the volar radial aspect of the ring finger of a 52-year-old woman with a 4-year history of pain.

Case Presentation

A 52-year-old housewife was referred to our university hospital (Shafa Orthopedic Hospital, Iran University of Medical Sciences, Tehran, Iran) with a 4-year history of pain at the volar radial aspect of the distal phalanx of the ring finger of the right hand. Prior diagnostic studies in other centers failed to detect the cause of pain and only nonsteroidal anti-inflammatory drugs (NSAIDs) were prescribed. Yet, the pain was not alleviated and the patient was referred again for further evaluation. At the clinical evaluation, a severe tenderness on palpation was found at the affected area with no cold hypersensitivity. At physical examination, no mass was noticed at the palpation of the painful region. Patient did not recall any history of trauma. Further, no rheumatologic or neoplastic disorders were recorded in the medical history of the case. Laboratory tests including white blood cell (WBC) count, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and rheumatologic tests were at the normal range. Radiologic assessment of the case was performed afterwards.

In plain radiographs, pressure erosion was noticed at the radial side of the distal phalanx of the involved finger (Figure 1).

Figure 1. (A) Lateral and (B) anteroposterior (AP) radiographs of the ring finger of right hand, showing pressure erosion on the volar radial aspect of the distal phalanx

In magnetic resonance imaging (MRI), a tiny mass was seen in the same region (Figure 2) and a glomus tumor was suspected. Subsequently, the patient underwent surgery and the lesion was approached through a volar radial incision. Then, the mass was excised and sent to the pathology department for histopathological examinations. In the pathology report, the lesion was a creamy-whitish soft-tissue with the size of 0.7 × 0.6 × 0.3 cm, composed of rounded regular cells with eosinophilic cytoplasm and round to oval nuclei wrapped around inconspicuous vessels. The stroma was fibrous with focal myxoid changes (Figure 3). These characteristics confirmed the glomus tumor diagnosis.

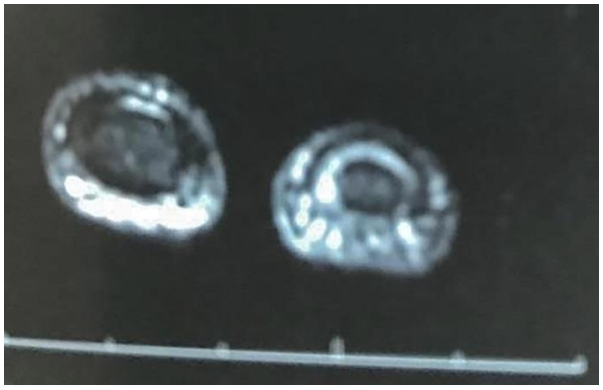

Figure 2. Magnetic resonance imaging (MRI) of the involved finger, showing a tiny mass in the volar radial aspect of the distal phalanx

The patient was discharged after the surgery and one-year follow-up of the patient revealed to be pain-free. No other complications were reported by the patient, as well. Informed consent was obtained from the patient to use necessary photographs for publication.

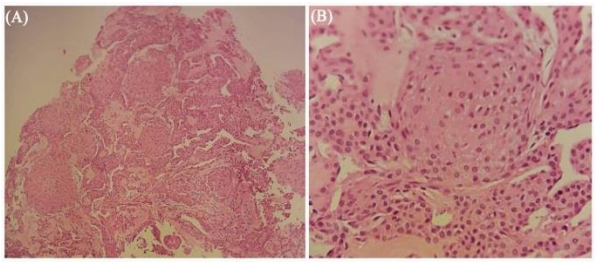

Figure 3. Histologic examination of the lesion, showing rounded regular cells with eosinophilic cytoplasm, round to oval nuclei wrapped around inconspicuous vessels, and fibrous stroma with focal myxoid change; (A) 10x and (B) 40x

Discussion

Since glomus tumor generally causes excruciating pain (6), its early diagnosis is of considerable clinical importance. Meanwhile, glomus tumors of atypical locations may pose a diagnostic challenge resulting in a delayed diagnosis. A considerable number of articles about glomus tumor have noted a long duration of symptoms before the definitive diagnosis that is mainly caused by the atypical presentation of the tumor (7-9). Thus, more reports of atypical glomus tumors seem necessary to help earlier diagnosis of the similar cases.

Glomus tumors may present in any limb. However, up to 75% of glomus tumors are located at the hand. As the glomus bodies are concentrated under the nail, nearly 65% of glomus tumors of the hand are detected in the fingertips, particularly in the subungual areas. However, glomus tumor of the volar aspect of the finger has been rarely reported. Here, we reported a case of glomus tumor in the volar aspect of the ring finger of a 52-year-old woman that its diagnosis was delayed owing to its atypical location as well as insensitivity to cold (10).

Glomus tumor of the volar pulp has also been reported by some other authors. Rosner et al. reported a case of glomus tumor in the volar digital pulp of a 72-year-old man who was presented with pain and was incredibly sensitive to touch. No mass was detectable at palpation of the finger. Based on this report, a localized pain in the fingertip could be regarded as an indicator of glomus tumor (11). Similar to the study of Rosner et al., in our case no cold sensitivity of the tumor was detected, which further complicated the diagnosis.

Shin et al. reported a case of glomus tumor in the volar side of the distal phalanx of a 52-year-old woman that was detected with an 8-year delay, despite the presence of typical triad symptoms including severe progressive pain, sensitivity to cold, and intense tenderness to palpation. This case further reveals the challenge in the differential diagnosis of the glomus tumors when presented in the atypical locations, even in the presence of typical symptoms (12).

Dwidmuthe et al. also reported a case of glomus tumor presented at the volar aspect of the right thumb of a 45-year-old woman with severe progressive pain, sensitivity to cold, and intensive tenderness at palpation. Although the clinical findings were indicative of glomus tumor, the definitive diagnosis was made 10 years after the manifestation of symptoms. They suggested glomus tumor to be taken into account in the differential diagnosis of fingertip pain (13).

Some clinical diagnostic tests have been developed for the diagnosis of glomus tumor including Love's pin test, Hildreth's test, and test of sensitivity to cold. Love's pin test uses a pin pressed gently over the tenderness region to locate the pain. A sensitivity and specificity of 100% and 0% has been reported for Love's pin test, respectively. In Hildreth's test, a tourniquet will be applied to the base of the involved digit and the Love's pin test will be repeated. In case of presence of a glomus tumor, the patient should not experience pain anymore. A sensitivity and specificity range of 77.4%-92.0% and 91%-100% has been reported for Hildreth's test, respectively. In cold sensitivity test, the involved limb will be placed in the vicinity of the cold, which produces an increased pain if the glomus tumor is the case. These tests might help the timely diagnosis of an atypical glomus tumor. A sensitivity and specificity of 100% has been reported for cold sensitivity test (14, 15).

The plain radiographs of glomus tumor are typically normal. Thus, complementary imaging modalities such as ultrasonography (US) (16) and MRI (17, 18) could be used to help the accurate diagnosis of glomus tumor and better visualizing of the lesion. In the report of *Matloub* et al., the MRI facilitated the diagnosis in the two out of 6 cases of glomus tumor with atypical presentation. They described MRI as a valuable, noninvasive, and accurate imaging study for the early diagnosis of occult glomus tumors (17).

Altogether, our case reveals that more awareness is needed regarding the consideration of glomus tumor of atypical areas such as volar aspects of fingertips. Moreover, it should be noticed that the diagnosis of glomus tumor cannot be ruled out in the absence of the typical triad symptoms of glomus tumor including pain, tenderness to palpation, and cold sensitivity, as no sensitivity to cold was present in our case.

Conflict of Interest

The authors declare no conflict of interest in this study.

Acknowledgments

None.

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