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Case Report

Glomus Tumor in the Elbow: A Case Report and Review of Histopathological Findings

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Abstract

Glomus bodies are neuromyoarterial apparatuses of the skin, implicated in body temperature control, and may undergo transformation with unregulated hyperplasia of their smooth muscle component. Glomus tumors most commonly occur in the subungual region of the fingers. These benign tumors are rare and constitute 1-5% of soft tissue tumors of the hand and may present as solitary or multiple masses. Solitary glomus tumors present with a classic triad of localized tenderness, severe pain, and cold sensitivity. We report a rare case of glomus tumor in the elbow and a review of the histopathological findings.

Keywords: glomus tumors; glomus bodies; hypersensitivity; hildreth's test; benign

Introduction

Glomus bodies are described as neuromyoarterial apparatuses of the reticular dermis of the skin implicated in body temperature control. Glomus tumors refer to hyperplastic growths of deformed smooth muscle cells found in the walls of the Sucquet-Hoyer canal, an anastomotic vascular component of the glomus body. [1] While these tumors can arise anywhere on the body, they most commonly occur on the distal phalanges of the fingers, particularly in the subungual region. [2] These tumors are rare and constitute 1-5% of soft tissue tumors of the hand. They are also benign, and may present in either solitary or multiple forms.3 Solitary glomus tumors are far more common, frequently found in women, and present as solitary, red-blue tumors typically found in the subungual region of the extremities. Multiple glomus tumors, on the other hand, are rare and constitute 10% of glomus tumor cases, and are more common in males and children, and present as clusters of bluish macules of varying sizes with no preferred site of occurrence. [3,4]

Solitary glomus tumors present with a classic triad of localized tenderness, severe pain, and cold sensitivity. [5] This presentation may be significant enough for clinical diagnosis or may be augmented with Love's pin test which presents as significant pain on pressure to affected area with pinhead. Another test is the Hildreth's test, which presents as alleviation of pain with tourniquet-induced transient ischemia. The third diagnostic test is the Cold-sensitivity test, which is increased pain with ice cube application to affected area. [6] If clinical presentation and these tests are inconclusive, MRI is considered the best imaging modality for diagnosing glomus tumors. With this diagnostic imaging test, glomus tumors appear characteristically as central points of high-intensity with a surrounding low-intensity zone. [6,7]

Case Report

A 75-year old African-American woman presented with a recurrence of left elbow pain. The patient reported that the pain persisted for more than 1-month and characterized it as constant and sensitive in nature. The pain also occurred at night. Physical examination elicited exquisite tenderness over the site of a previous incision. There was a small nodule which was very sensitive. Left elbow range of motion was full. No sensory deficits were noted and there was good vascular perfusion. The patient was consented for a trigger point injection at the nodule area. A 27-gauge, 1 ¼ inch needle was utilized to inject a 0.5 cc solution of 1% lidocaine without epinephrine plus 10 mg/mL of 0.5 cc Dexamethasone.

The patient presented two months later with the return of the persistent left elbow pain. She reported that the injection received during the initial visit was effective for 2-3 days. The treatment options were discussed, and the patient was consented for a surgical resection of the mass. Postoperatively, the patient presented for a four week follow up, and reported improvement of pain. She denied numbness, tingling, fever, chills and nocturnal pain.

The specimen was stored in formalin and evaluated by the Pathology Department. It consisted of four unoriented, irregular fragments of yellow, lobulated fibroadipose tissue ranging from 0.4 to 2.2 cm in greatest dimension. The largest fragment was mildly hyperemic and fibrous.

Sectioning revealed a lobulated cut surface with no discrete masses or lesions.Histopathologically, the specimen was evaluated with H&E and immunostain for smooth muscle actin (SMA). Low-power field revealed a well circumscribed nodule and solid sheets of cells, interrupted by vessels (Figure. 1). Under high-power field, glomus

cells were visualized in hyalinized stroma. (Figure. 2) The tumor also consisted of nests of glomus cells surrounding capillary sized vessels (Figure. 3A) and small, uniform and round glomus cells with a centrally placed nucleus and eosinophilic cytoplasm (Fig. 3B). Further hyalinization of the stroma was visualized with H&E stain under 200x magnification (Figure. 4). An immunostain for smooth muscle actin (SMA) was utilized and demonstrated strong cytoplasmic positivity in the glomus cells, supporting the diagnosis (Figure. 5).

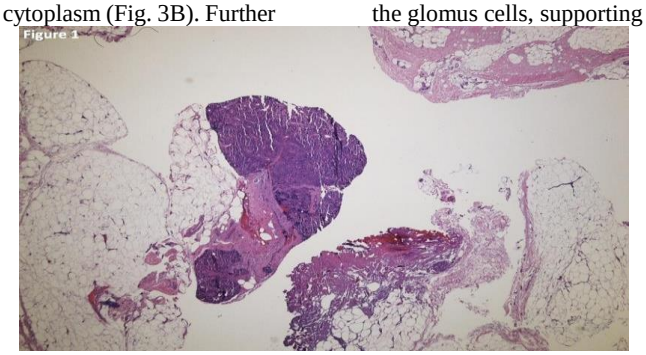

Figure 1: A low magnification picture of glomus tumor showing a well-circumscribed nodule composed of solid sheets of cells interrupted by vessels of varying size (H&E, x40)

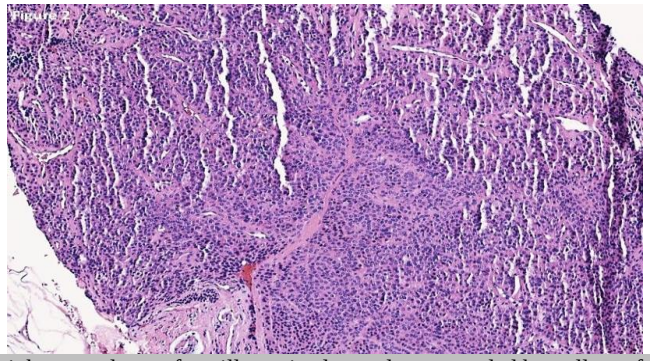

Figure 2: Glomus tumor consisting of tight convolutes of capillary-sized vessels surrounded by collars of glomus cells set in a hyalinized stroma (H&E, x100)

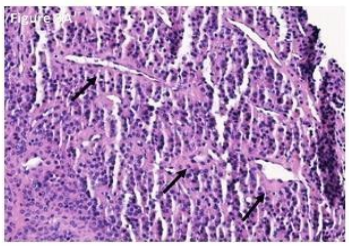

Figure 3A: Nests of glomus cells surrounding capillary sized vessels (arrows) (H&E, x200)

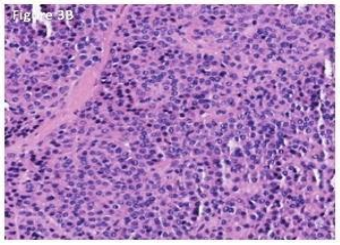

Figure 3B: Glomus cells are small, uniform, rounded cells with a centrally placed, round nucleus and eosinophilic cytoplasm (H&E, x200)

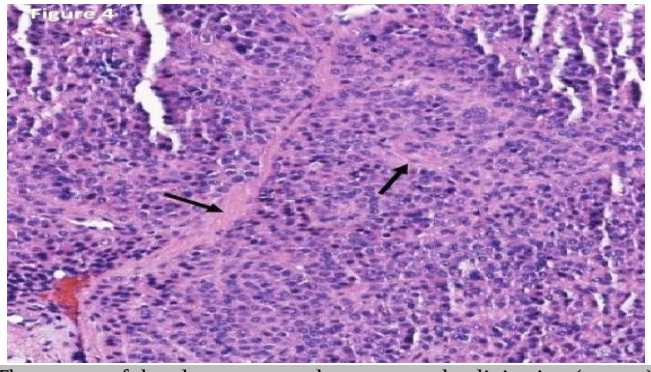

Figure 4: The stroma of the glomus tumor demonstrates hyalinization (arrows) (H&E, x200)

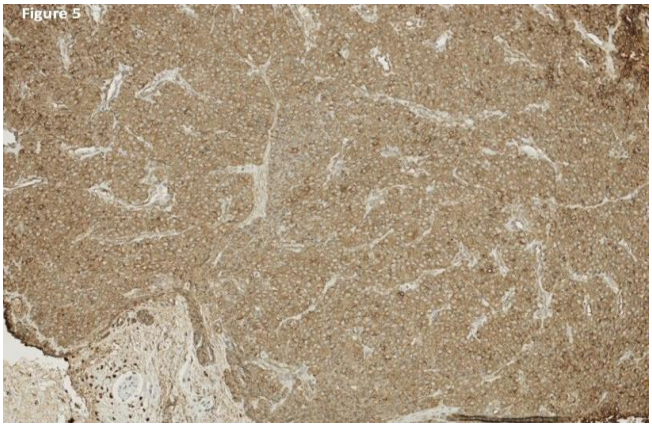

Figure 5: Immunostain for smooth muscle actin (SMA) shows strong cytoplasmic positivity in glomus cells supporting the diagnosis (H&E, x 100)

Discussion

The patient presented with two of the three classic symptoms accompanying glomus tumors, localized tenderness and severe pain. This is not uncommon as tenderness and pain are associated with approximately 86% of cases, while cold hypersensitivity is seen in only 1% of patients. [8] To alleviate the pain, and also to rule out a possible differential diagnosis of trigger point, a trigger point injection was administered. Trigger points typically present as a hypersensitive or painful nodule made of skeletal muscle fibers [9], appearing clinically quite similar to a glomus tumor. Though the exact mechanism of action for trigger point injections remains elusive, it has proven effective at treating the condition for which it's named after. That the pain was subdued for only 3 days after the injection ruled out trigger point as a possibility. Histological assessment would allow for a more concrete diagnosis.Though glomus tumors are typically diagnosed clinically, it's consistent histological presentation allows for an effective diagnostic standard. In addition to digits, they are also often found in the dermis of the forearm, as with our patient, as well as the palm and wrist. Glomus tumors classically present as a nodular mass consisting of glomus and smooth muscle cells, with round or oval nuclei, organized into uniform sheets surrounding blood vessels. [10] This patient's histological presentation was consistent with the diagnosis of a glomus tumor, confirming the initial suspicions. The expression of SMA, though nonspecific, provided further support towards this decision. Glomus tumors are managed with surgical excision, as with our patient. This has been shown to be a curative measure in approximately 90% of patients. [11]

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