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Myoglomus Tumor: Glomus Tumor with Prominent Smooth Muscle Differentiation

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ABSTRACT

Glomus tumors are rare benign mesenchymal tumors with various subclassifications. This is a case of a 71-year-old female with a 1.0 cm painful, firm nodule on her right heel who underwent surgical resection. The tumor demonstrated glomus cells with prominent smooth muscle differentiation that stained positively for SMA and caldesmin. Though glomangiomyomas are defined as having both a smooth muscle and vascular component, they do not account for such extensive smooth muscle differentiation. This case report proposes a new entity to better define these such tumors as a myoglomus tumor.

Keywords

Glomus tumor, Myoglomus tumor.

Introduction

Glomus tumors are benign mesenchymal tumors that predominantly occur in the distal extremities that are composed of glomus cells, which are specialized smooth muscle cells within the glomus body that are important for thermoregulatory regulation [1-3]. There are three main histologic variants: solid glomus tumor, glomangioma, and glomangiomyoma. Each variant is made up of varying amounts of glomus cells, vasculature, and smooth muscle, and their differentiation is based on the amount of each component. Glomangiomyomas are the least common of the variants, and they are described as having prominent vascular and smooth muscle components [1]. Here within is a case of a variant of glomus tumor that demonstrates extensive smooth muscle differentiation with delicate vasculature, and we propose a new diagnostic entity to better classify similar tumors.

The patient was a 71-year-old female with a medical history significant for coronary atherosclerosis, hyperlipidemia, hypertension, and depression, who initially presented to her podiatrist for a painful right heel mass. The mass had been present for more than 2 years, and she stated that it has grown since she first noticed it. She claims to have previously attempted to drain the lesion, thinking it was a cystic structure, but was unsuccessful, and as a result the lesion became more painful. A thorough physical examination revealed a 1.0 cm painful, well-circumscribed, subcutaneous mass on the posterolateral aspect of her right calcaneus (Figure 1), with no evidence of ulceration or clinical signs of infection. Due to her discomfort the patient was scheduled for surgical resection. The specimen was surgically excised and sent for surgical pathology.

Histologically the sections of the tumor demonstrated a highly cellular group of glomus cells with prominent smooth muscle differentiation, and the cells were surrounding numerous delicate blood vessels (Figure 2). A trichrome stain was performed to reveal the significant collagen deposition in the background. Immunohistochemistry was performed and revealed that the tumor cells were positive for SMA and caldesmin, but they were negative for HMB45 and PanCK. The blood vessels demonstrated staining with CD31 and CD34.

The differential diagnosis for this entity was glomus tumor, myopericytoma, angioleiomyoma, and an adnexal tumor. Given the prominent glomus cells with positive staining for SMA and caldesmin and negative staining for PanCK, this eliminated the

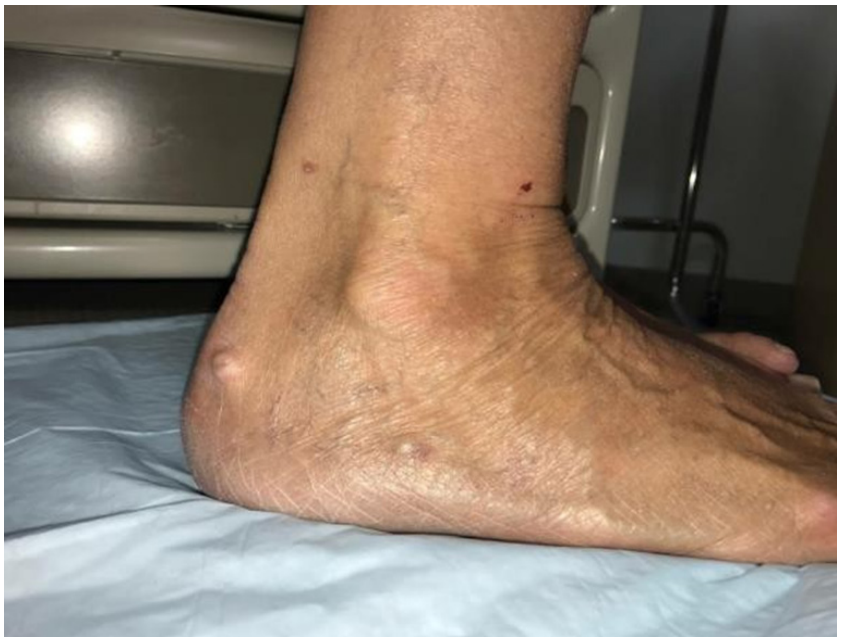

Figure 1: Image of the right postero-lateral calcaneus mass.

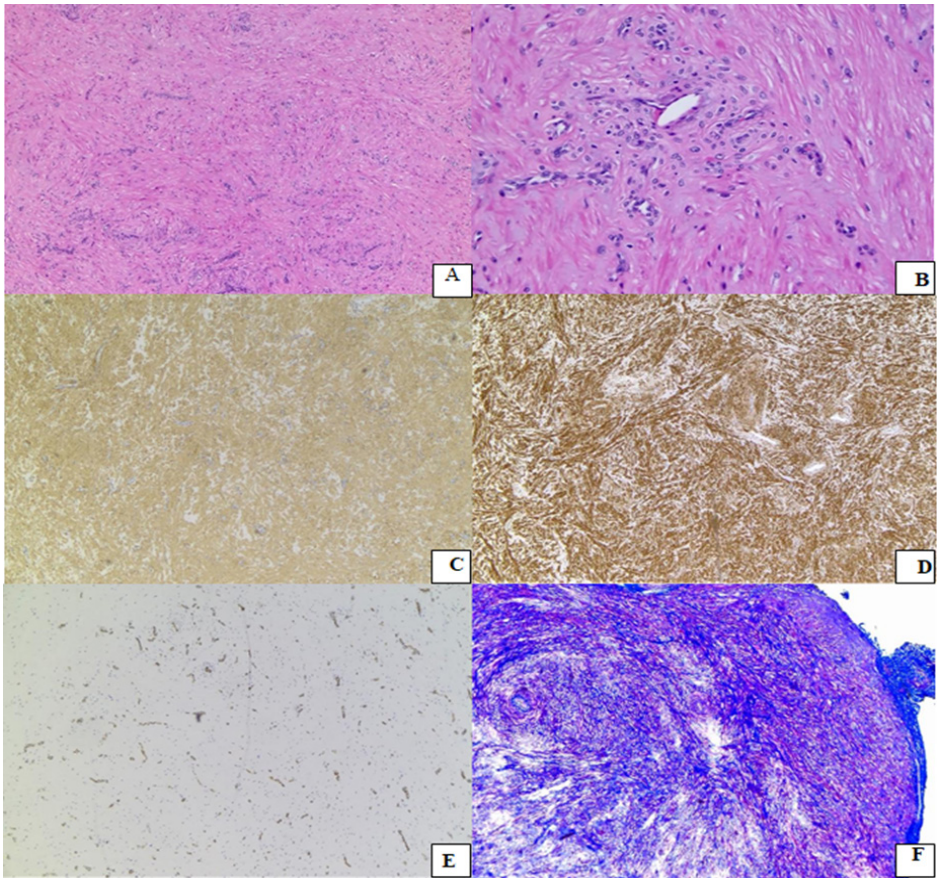

Figure 2: A) H&E stain demonstrating significant smooth muscle differentiation (5x); B) H&E stain of glomus tumor demonstrating characteristic glomus cells surrounding vasculature with smooth muscle differentiation (20x); C) SMA immunohistochemical stain staining positive in tumor cells (5x); D) caldesmin immunohistochemical stain staining positive in tumor cells (5x); E) CD31 stain demonstrating delicate vasculature within the tumor, but tumor cells stain negative (5x); F) trichrome stain of tumor demonstrating collagen deposition (5x).

diagnoses of myopericytoma, angioleiomyoma, and adnexal tumors. The patient tolerated the surgery well and did not have any recurrence of the lesion.

Discussion

Glomus tumors are rare benign soft tissue tumors that predominantly occur in the distal extremities, most commonly occurring in the nail beds of the digits, and they typically present in the dermis [4]. Given their origination from the glomus body, they are often described as painful and sensitive to temperature changes [4,5]. The classic histological description of glomus tumors was described in 1924, and is made up predominantly of sheets of glomus cells [6]. However, they can be further divided into three main subtypes: solid glomus tumor, glomangioma, and glomangiomyoma. The solid glomus tumor is made up of glomus cells with minimal smooth muscle and vasculature, and glomangiomas consist of glomus cells, prominent vasculature, and minimal smooth muscle [1]. Glomangiomyomas contain both aprominent vasculature and smooth muscle, and they are considered to be the rarest subtype, accounting for approximately 5% of all glomus tumors [1].

As previously discussed, the differential diagnosis for the described case included glomus tumor, myopericytoma, angioleiomyoma, and an adnexal tumor. Given the prominent glomus cell population this tumor is best diagnosed as a glomus tumor, yet the distinct and abundant smooth muscle differentiation within the tumor distinguishes it from glomangiomyoma. Due to this, we propose the addition of a new diagnostic subtype of glomus tumor: myoglomus tumor. With the addition of this subtype it will allow for better determination of the etiology and prognosis of such tumors.

Acknowledgements

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