

Subungual glomus tumors: diagnostic challenges and clinicopathological spectrum at a Brazilian referral center

Tumores glômicos subungueais: desafios diagnósticos e espectro clinicopatológico em um centro de referência brasileiro

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Abstract

Glomus tumors are rare benign vascular neoplasms with variable clinical presentations that may hinder diagnosis. This study aimed to characterize the clinical, imaging, and histopathological features of patients with subungual glomus tumors treated in Belém, Pará, Brazil, between January 2020 and December 2025. This observational, retrospective, descriptive study included 10 patients with histopathologically confirmed diagnoses. Females predominated (90%), with a mean age of 46.4 years (27-69 years). Lesions predominantly affected the fingers, with one case involving the hallux. Localized pain was present in all patients, whereas clinical presentation was heterogeneous, including nail abnormalities, subungual tumors, increased volume, and lesions suggestive of subungual hematoma. Magnetic resonance imaging and ultrasonography showed suggestive findings in most patients, although some examinations were negative. Despite architectural heterogeneity, all cases showed compatible cytomorphological features. Clinical and radiological variability reinforces the diagnostic challenge and the importance of integrating clinical assessment, imaging, and histopathological confirmation.

Keywords: Glomus tumor. Nails. Vascular neoplasms.

Resumo

Os tumores glômicos são neoplasias vasculares benignas raras, com apresentação clínica variável que pode dificultar o diagnóstico. Este estudo objetivou caracterizar aspectos clínicos, de imagem e histopatológicos de pacientes com tumor glômico subungueal atendidos em Belém, Pará, Brasil, entre janeiro de 2020 e dezembro de 2025. Estudo observacional, retrospectivo e descritivo incluiu 10 pacientes com diagnóstico histopatológico confirmado. Houve predomínio feminino (90%), com idade média de 46,4 anos (27-69 anos). As lesões acometeram predominantemente os quirodáctilos, com um caso no hálux. Dor localizada ocorreu em todos os pacientes, enquanto a apresentação clínica foi heterogênea. Ressonância magnética e ultrassonografia apresentaram achados sugestivos na maioria dos casos, embora alguns exames fossem negativos. Apesar da heterogeneidade arquitetural, todos os casos apresentaram características citomorfológicas compatíveis. A variabilidade clínica e radiológica reforça o desafio diagnóstico e a importância da integração entre avaliação clínica, imagem e confirmação histopatológica.

Palavras-chaves: Tumor glômico. Unhas. Neoplasias vasculares.

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Introduction

Glomus tumors (GTs) are rare, benign, vascular tumors originating from glomus bodies.^{1,2} They are commonly located in the hands and feet, where glomus bodies are more densely distributed.^{1,2} They account for approximately 2% of hand tumors, predominantly affect middle-aged individuals, and show a female predominance.³ Despite their classic clinical triad, the variability in presentation may delay diagnosis.

The aim of this observational, retrospective, and descriptive study was to characterize the clinical and diagnostic features of patients with subungual GTs treated in Belém, Pará, Brazil, from January 2020 to December 2025. Written informed consent for the use and publication of the data was obtained using the

standardized form provided by the dermatology service, and the CARE checklist guidelines for case reports and case series were followed.

Case report

Ten patients with histopathologically confirmed subungual GTs were included in the study (Table 1). The clinical presentation and histopathological features are illustrated in figure 1.

There was a predominance of females (90%), with a mean age of 46.4 years (range, 27-69 years). The lesions predominantly affected the fingers, with only one case involving the hallux. Localized pain was present in all patients. The clinical presentation was heterogeneous, ranging from subtle nail plate changes and

Table 1. Clinical and pathological characteristics of patients with subungual glomus tumors

Case	Sex/ Age	Location	Clinical presentation	Imaging modality (ies)	Histopathological findings	Clinical course
1	M/69	Left thumb	Pain, cold sensitivity, nail dystrophy, discoloration, and subungual hyperkeratosis	MRI (+)	Uniform ovoid cells surrounding ectatic vessels, with a myxoid stroma	Follow-up
2	F/69	Right thumb	Nail dystrophy, proximal nail matrix tumor, and erythema	US (+)	Eosinophilic cellular aggregates in a myxoid stroma	Discharge
3	F/49	Right middle finger	Pain, cold sensitivity, and a subtle lateral/proximal violaceous discoloration	MRI (-)	Monomorphic ovoid cells, ectatic vascular channels, and desmoplastic stroma	Discharge
4	F/54	Left ring finger	Pain, cold sensitivity, nail plate thickening, and a subungual hematoma-like appearance	US (-)	Monomorphic ovoid cells, ectatic capillaries, and basophilic stroma	Follow-up
5	F/27	Left great toe	Pain, cold sensitivity, subungual hematoma, and nail plate thickening	US (+)	Aggregates of eosinophilic cells surrounding thickened capillaries	Follow-up
6	F/42	Left thumb	Pain, cold sensitivity, and subtle nail plate elevation with erythematous-violaceous discoloration	MRI (+)	Branched capillary vessels surrounded by glomus cells	Discharge
7	F/29	Left middle finger	Pain, cold sensitivity, and subtle distal nail atrophy	MRI (+)	Branched capillary vessels surrounded by glomus cells	Discharge
8	F/35	Distal volar aspect of the right ring finger	Well-demarcated violaceous tumor	X-ray(+) and US (+)	Branched capillary vessels surrounded by glomus cells	Follow-up
9	F/35	Nail matrix of the right little finger	Well-demarcated violaceous tumor	X-ray (+) and US (+)	Aggregates of eosinophilic cells surrounding ectatic vessels	Follow-up
10	F/55	Left thumb	Pain, subtle nail plate elevation, and lateral/proximal violaceous discoloration	US (+)	Capillaries of varying sizes surrounded by uniform glomus cells	Discharge

MRI: magnetic resonance imaging; US: ultrasonography; X-ray: radiography; (+): examination with findings suggestive of a glomus tumor; (-): examination without findings suggestive of a glomus tumor.

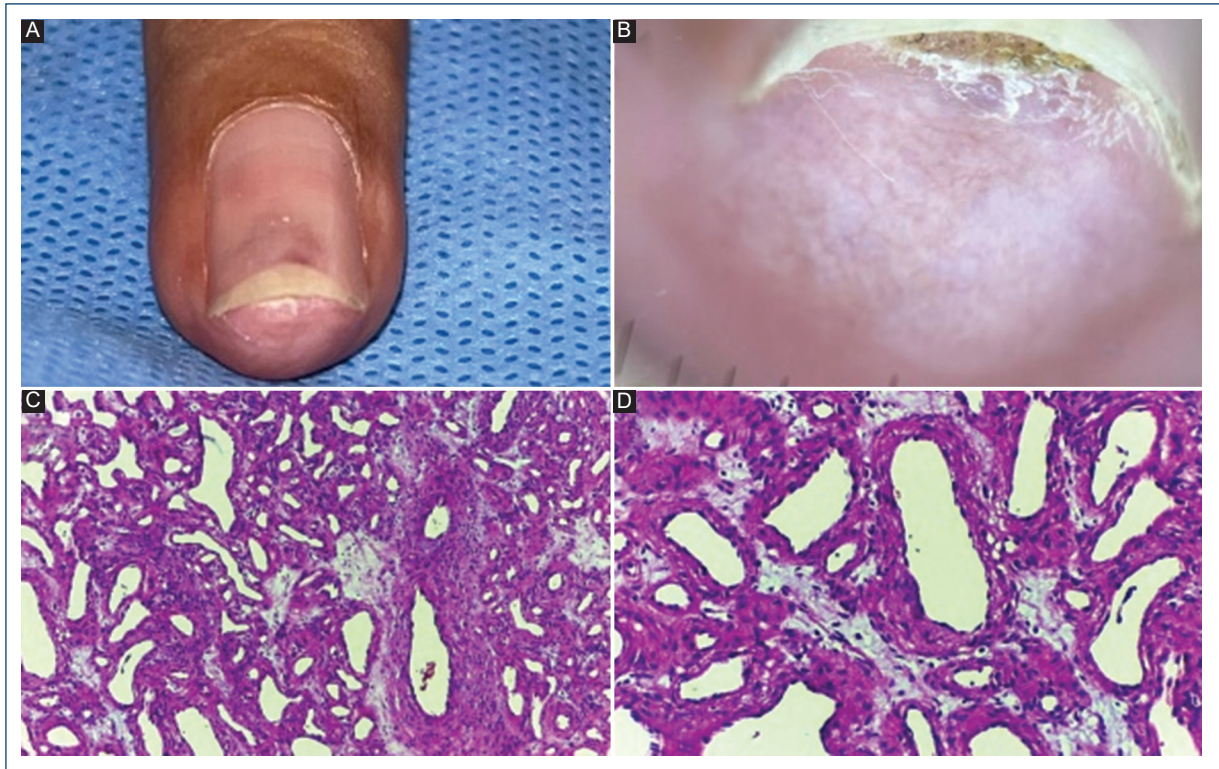


Figure 1. **A:** Clinical appearance of the glomus tumor. **B:** Dermoscopy showing a subungual nodule. **C** and **D:** Hematoxylin and eosin (hematoxylin and eosin) photomicrographs at $\times 20$ and $\times 40$ magnification, respectively, demonstrating a proliferation of glomus cells surrounding vascular structures.

subungual tumors to increased volume and lesions initially suggestive of subungual hematoma. Cold sensitivity was reported in 6 cases.

Imaging modalities showed variable diagnostic performance. Magnetic resonance imaging and ultrasonography identified findings suggestive of glomus tumors in most patients (80%), mainly subungual solid nodules, Doppler hypervascularity, and remodeling of the distal phalanx. However, imaging examinations without abnormalities were also observed in cases subsequently confirmed by histopathology.

Despite architectural heterogeneity, all lesions exhibited cytomorphological features typical of GTs, differing mainly in cellular organization and stromal characteristics. Solid aggregates, cellular cords, and perivascular patterns were observed, with variations in the stroma, and all cases were histopathologically confirmed.

Discussion

The main finding of this series was that, although pain was present in all patients, the clinical presentation, imaging findings, and morphological patterns varied

widely, reinforcing the diagnostic challenge posed by subungual GTs. The classic triad of paroxysmal pain, localized tenderness, and cold sensitivity is not always fully present. In our series, cold sensitivity was reported in only six patients, consistent with studies describing variability in this symptom despite the high frequency of localized pain.^{1,4} When associated with subtle or non-specific nail changes, these manifestations may mimic subungual hematoma, onychomycosis, or onychodystrophies, contributing to the diagnostic delays frequently described in the literature.²⁻⁴

Imaging modalities are important for anatomical localization and surgical planning but have diagnostic limitations. Magnetic resonance imaging is considered the most sensitive imaging modality for subungual GTs, with studies demonstrating detection of nearly all histologically confirmed lesions,¹ although small lesions, atypical locations, and technical limitations may reduce its accuracy.^{5,6} In our series, magnetic resonance imaging and ultrasonography identified suggestive lesions in most patients; however, examinations without abnormalities also occurred in cases subsequently confirmed by histopathology, reinforcing

that negative imaging findings do not exclude the diagnosis when clinical suspicion is high.⁷

From a histopathological perspective, architectural heterogeneity was observed among the cases, with different patterns of cellular and stromal organization, while the characteristic cytomorphological features of GTs were preserved. This finding supports previous studies demonstrating broad morphological variability while maintaining histopathology as the gold standard for diagnostic confirmation, particularly when the clinical presentation or imaging findings are inconclusive.⁷⁻⁹

The limitations of this study include those inherent to its retrospective design, the small number of patients, and the non-uniform performance of imaging examinations, which precluded a systematic comparison of their diagnostic accuracy.

Conclusion

In conclusion, these findings underscore the need to maintain a high degree of diagnostic suspicion in patients with persistent nail pain, even in the presence of subtle clinical manifestations, an incomplete classic triad, or imaging examinations without evident abnormalities. Integrating clinical assessment, imaging modalities, and histopathological confirmation is essential for the early recognition of subungual GTs, helping to reduce the often prolonged diagnostic delays and enabling timely treatment.

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None.

Conflicts of interest

None.

Ethical considerations

Protection of human subjects and animals. The authors declare that no experiments on humans or animals were performed for this research.

Confidentiality, informed consent, and ethical approval. The authors have obtained approval from the Ethics Committee for the analysis of routinely collected and anonymized clinical data; therefore, individual informed consent was required. Relevant ethical recommendations have been followed.

Declaration on the use of artificial intelligence. The authors declare that ChatGPT was used for manuscript translation purposes only, with the meaning verified by the authors, because the original language of the manuscript is Portuguese.

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