Original Article

Digital glomus tumor: An experience of 57 cases over 20 years

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Abstract

Background: Glomus tumors are rare tumors and may affect any area of the body, but digits, palms, and soles are commonly affected due to higher number of glomus body. We present our experience with the management of 57 cases of glomus tumors of the fingertips treated over a period of 20 years (2000–2019). **Materials and Methods:** Medical records of 57 cases with glomus tumors treated over a period of 20 years were reviewed for patient demographics, presenting characteristics, duration, previous treatment history, physical examination, investigation, treatment, follow-up, and recurrence. **Results:** In our study, the mean age was 49 years, with age 47 years among women and 53 years among men suggesting glomus tumor as a disease of past middle age. The total number of cases was 57 with 44 women and 13 men. Site of lesion was nail bed in 50 cases (87.7%) and tip of finger in 7 cases (12.3%). In clinical assessment pinpoint tenderness was present in all 57 cases (100%) and pain in 56 cases (98.8%). Other features at the time of presentation were nodularity in 38 cases (66.6%), deformed nail in 14 cases (24.6%), and cold hypersensitivity in 20 cases (35.1%). The mean duration of the disease was 2.3 years (1.2–5.6 years). **Conclusion:** One of the most painful clinical conditions confirmed by comprehensive clinical assessment and cured dramatically by complete surgical excision.

Keywords: Digits, excision, fingers, glomus tumor

Introduction

Glomus tumors are mesenchymal neoplasms of modified smooth muscle cells of the traditional glomus body. Regulation of blood flow to the skin is by glomus body which is modified smooth muscle cells with property of contractility. These are rare tumors and should affect any area of the body, but digits, palms, and soles are commonly affected due to higher number of glomus body. Up to 75% occur within the hand, and approximately 65% of those are within the fingertips, particularly within the subungual location, although pulp lesions have also been reported. Solitary glomus tumors usually present as painful lesions. Multiple lesions could also be painless; they classically present with a triad of symptoms, which include pain, pinpoint tenderness, and hypersensitivity to cold. This presentation is presumed to enable a clinical diagnosis in 90% of cases.[1,2]

Glomus tumors can present to outpatient clinics of multiple specialties, and patients usually report an extended duration of symptoms before correct diagnosis and treatment. They are difficult to diagnose, particularly as they are often small and situated deep within the fingertip. Nonspecific symptoms and unremarkable physical examination mean that incorrect diagnoses and inappropriate treatments are common.[3,4] We present our experience with the management of 57 cases of glomus tumors of the fingertips treated over a period of 20 years.

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Materials and Methods

This is a retrospective study and analysis of 57 patients presenting with clinically suspected glomus tumor, during a period of 20 years from 1 January 2000 to 31 December 2019. Medical records were reviewed for patient demographics, presenting characteristics, duration, previous treatment history, physical examination, investigation, treatment, follow-up, and recurrence. The acute pain on touching or with exposure to coldness within the fingertip region was invariable finding associated. The classical clinical criteria to make the diagnosis was the characteristic triad of findings: localized tenderness, pain, and cold-sensitivity. Plain radiographs were taken in 13 cases. Ultrasound (US) examination was performed selectively in 34 cases to suggest the diagnosis and localize the lesion. Magnetic resonance imaging (MRI) was preferred in 18 patients in doubtful cases to verify the diagnosis and localize the lesion. All patients were treated with surgical excision.

All surgeries were performed as day case surgery. The lesion was localized and marked with marker pen before administering local anesthesia. Digital nerve conduction anesthesia was used in all cases with lignocaine 0.5%.

Transungual approach was most ordinarily used for subungual lesions and people with pulp lesions with an immediate incision over the suspected site. All specimens were sent for histopathological examination (HPE). Suture removal was performed on postoperative day 10. Routine follow-up was performed at 6 weeks and 6 months. Patients were advised to consult if they experienced any postoperative pain, nodularity, or recurrence of symptoms.

Results

In our study, the mean age was 49 years, with age 47 years among women and 53 years among men suggesting glomus tumor as a disease of past time of life. The total number of cases was 57 with 44 women and 13 men [Table 1]. Site of lesion was nail bed in 50 cases (87.7%) and tip of finger in 7 cases (12.3%). In clinical assessment, pinpoint tenderness was present altogether 57 cases (100%) and pain in 56 cases (98.8%). Other features at the time of presentation were nodularity in 38 cases (66.6%), deformed nail in 14 cases (24.6%), and cold hypersensitivity in 20 cases (35.1%). The mean duration of the disease was 2.3 years (1.2–5.6 years).

In radiological investigations, X-ray of hand was carried out in 13 cases with suggestive bone changes [Figure 1] only in 2 cases so poorly helpful in reaching the diagnosis. US study was done in 34 cases and most of them were already carried out at the time outpatient consultation in our surgical unit, but only five cases had detailed study localizing the lesion as glomus tumor and mentioning dimensions clearly confirming the diagnosis. MRI was done in only 18 cases with a diagnostic yield of 100 %. On histopathology, glomus tumor was confirmed after excision of all 18 cases. So, MRI should be the investigation of choice to confirm the diagnosis, which is usually a clinical diagnosis in most cases.

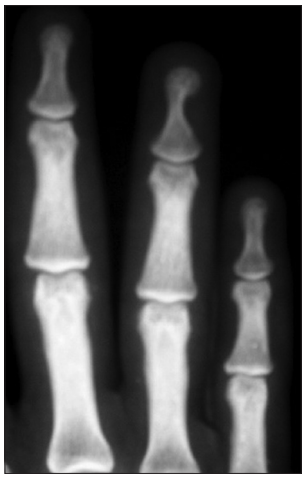

Figure 1: Plain X-ray of hand showing distal phalanx sclerosis

Table 1: Characteristics in 57 cases of glomus tumor

Sl. no.	Characteristic	Value
1.	Age (mean)	
	All	49 years
	Male	53 years
	Female	47 years
2.	Sex (F:M)	3.4:1 (44:13)
3.	Site	
	Nail bed (subungual)	50 (87.7%)
	Tip of finger (pulp)	7 (12.3%)
4.	Clinical features	
	Pain	56 (98.2%)
	Pinpoint tenderness	57 (100%)
	Nodularity	38 (66.6%)
	Deformed nail	14 (24.6%)
	Cold hypersensitivity	20 (35.1%)
	Duration	2.3 years (1.2-5.6 years)
5.	Radiological study	
	X-ray hand	13
	Diagnostic value	2
	USG	34
	Diagnostic value	5
	MRI	18
	Diagnostic value	18
6.	Histopathology	
	Size (mean) in cm	0.80 (0.32-1.62 cm)
	Microscopic findings	
	Glomus tumor	53 (93%)
	Glomangioma	4 (7%)
7.	Follow-up outcome	
	Pain	3 (5.3%)
	Nail deformity	8 (14%)
	Recurrence	2 (3.5%)

Clinical diagnosis with history and examination was sufficient to proceed for surgical exploration. The transungual approach was

used by altogether cases with subungual tumors, whereas direct incision over pulp lesion was preferred for excision.

HPE of the tumor revealed glomus tumor in 53 (93%) cases, whereas glomangioma in 4 (7%) cases. The mean size was 0.81 cm (0.32–1.81 cm).

All patients were symptom-free postoperatively during follow-up except 3 (5.3%) having pain appearing again and of three, recurrence was the cause in 2. Nail deformity was detected in eight (14%) cases, but pain was not present in any of the eight cases. There has been no recurrence during follow-up period either in terms of symptoms or signs.

Discussion

Glomus tumors are difficult to diagnose, particularly as they are often small and situated deep within the fingertip. The common characteristic in most series is the long duration of symptoms before correct diagnosis and treatment. The typical delay in the diagnosis was 2.3 years in our series. During this era, the patient was in pain because errors in diagnosis and therefore the incontrovertible fact that other medical and surgical treatments are useless.[3]

Most patients spent these years visiting multiple physicians and other health professionals without a definitive diagnosis or treatment plan. A number of the varied specialties involved within the care of our patients, as in most series, included medical care, dermatology, neurology, rheumatology, neurosurgery, orthopedics, and even alternative medical treatments.[1,5] The prescribed investigations included electrophysiological studies, magnetic resonance (MR) imaging of the cervical spine, computerized tomography of the cervical spine and hand, and isotope-bone scans. Inappropriate treatments were advised which included physiotherapy, radiotherapy, cortisone injections, vasodilator therapy, carpal tunnel release, cubital nerve decompression, laminectomy, sympathectomy, and even amputation which was common with other series.[6]

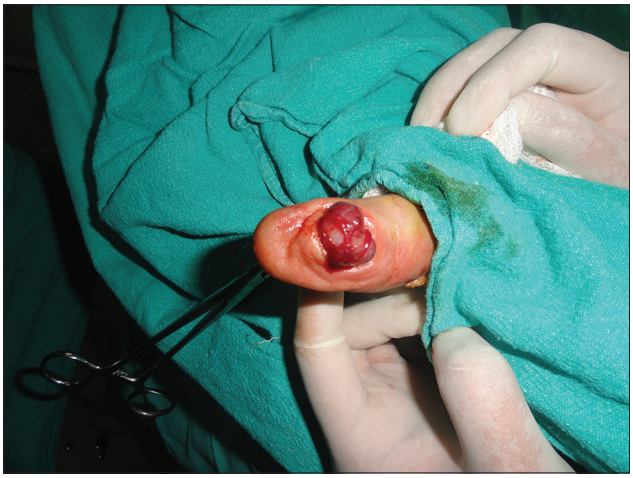

Figure 2: Exposure of glomus tumor

Considering clinical assessment with history and examination adequate enough to succeed in the diagnosis in most cases, imaging study is integral in some cases to succeed in the diagnosis and in most case to spot, localize, and measure the lesion to plan surgical excision. Bone erosion or invasion could also be present in X-ray counting on site of origin and size of the lesion. A sclerotic border is present sometimes during a slowly enlarging glomus tumor [Figure 1]. Radiographic medical diagnosis should include epidermal inclusion cyst, enchondroma, chronic osteomyelitis, sarcoidosis, metastatic carcinoma, subungual melanoma, and osteoid osteoma.[3]

Increased vascularity and high flow velocity in shunt vessels inside the glomus tumor at color-Doppler imaging is very specific for the diagnosis but High-frequency probes are used for US (15 MHz) to spot the relationship of a tumor with the adjoining components of the nail apparatus and underlying bone. In our study, ultrasonography (USG) examination was performed selectively in 34 cases to verify the diagnosis and localize the lesion.

The most reliable, accurate, and sensitive tool in diagnosing glomus tumor is MRI with decreased signal intensity in T1-weighted image and marked hyperintensity on T2-weighted images, and powerful enhancement after the injection of gadolinium-based contrast material. However clinical diagnosis almost a sign to proceed for exploration as very small lesions might not be diagnosed even in MR images so it is only helpful in confirmation of diagnosis and localization in certain selected cases instead of each and every case of glomus tumor. We performed MRI in 18 cases with diagnosis and localization in all (18/18).

The preferred exposure technique for excision of typical glomus tumor is transungual approach,[5-7] which provides adequate exposure for complete surgical excision in well-localized subungal location tumors [Figure 2]. The transungual approach was used by us in altogether cases with subungual tumors. Proper exposure of the tumor for complete excision [Figure 3] and replacement of the nail plate in normal position are two key steps to stop recurrence and nail plate deformity.[7]

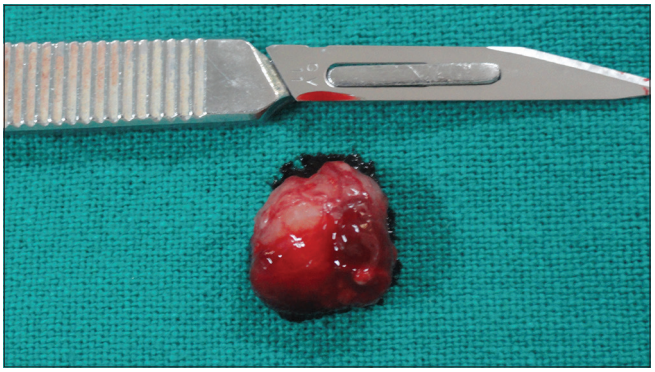

Figure 3: Excised glomus tumor

The only treatment option in glomus tumor is surgical excision.[5] Recurrence rates are reported in various studies starting from 3% to 33% and incomplete excision is typically most common fact about recurrence. Earlier appearance of symptoms within days to weeks is always due to incomplete surgical excision, whereas delayed manifestations after that can plan many months or years could be due to newer tumor or multiple tumors.[8] Recurrence rate of 15.7% in a group of 19 patients treated with excision using the lateral subperiosteal approach have been reported which is above standard recurrence rate of 10% which can be due to lateral subperiosteal approach resulting in improper exposure and inadequate excision.[9]

The subungual lesions that require to be kept in mind during evaluation of those patients include benign solid tumors (glomus tumor, subungual exostosis, soft-tissue chondroma, keratoacanthoma, hemangioma, and lobular capillary hemangioma), benign cystic lesions (epidermal and mucoid cysts), and malignant tumors (squamous cell carcinoma and malignant melanoma). The medical diagnosis for glomus tumor that needs consideration includes subungual angioleiomyoma, hyperplastic pacinian corpuscles, blue nevi, blue rubber bleb nevus syndrome, eccrine spiradenoma, Kaposi sarcoma, Maffucci syndrome, neurilemmoma, and venous malformations.[10-14]

Conclusion

Glomus tumor is one of the most painful clinical condition confirmed by comprehensive clinical assessment and cured dramatically by complete surgical excision. The results following surgery are fruitful and satisfactory both for the patient and surgeon in terms of cure without complications and almost nil risk of recurrence.

Learning Points

1. Painful digital nodule of smaller size should be evaluated for glomus tumor always.
2. Primary care physicians should evaluate with complete clinical examination to diagnose earliest.
3. Cure with complete excision is always possible with very low risk of recurrence.
4. Clinical examination is sufficient for diagnosis and surgery as investigations are of limited use, but MRI is the gold standard investigation.
5. Painful nodule over any part of the body which is disproportionate to the size of the lesion should always have a possibility of glomus tumor.
6. Pain, pinpoint tenderness, and hypersensitivity to cold are three characteristic triads to be kept in mind for any primary care physician when examining any nodule with possibility of glomus tumor as clinical diagnosis.

Ethical approval

Ethical approval was taken from Ethical Committee of Institute of Medical Sciences, Banaras Hindu University

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Conflicts of interest

There are no conflicts of interest.

References

1. Schiefer TK, Parker WL, Anakwenze OA, Amadio PC, Inwards CY, Spinner RJ. Extradigital glomus tumors: A 20-year experience. Mayo Clin Proc 2006;81:1337-44.
2. Samaniego E, Crespo A, Sanz A. Key diagnostic features and treatment of subungual glomus tumor. Actas Dermosifiliogr 2009;100:875-82.
3. Tang CYK, Tipoe T, Fung B. Where is the lesion? Glomus tumours of the hand. Arch Plast Surg 2013;40:492-5.
4. Carroll RE, Berman AT. Glomus tumors of the hand. J Bone Joint Surg Am 1972;54:691-703.
5. Acar E. Surgical treatment outcomes of glomus tumor of the finger. Hand Microsurg 2017;6:125-9.
6. Shin DK, Kim MS, Kim SW, Kim SH. A Painful glomus tumor on the pulp of the distal phalanx. J Korean Neurosurg Soc 2010;48:185-7.
7. Takata H, Ikuta Y, Ishida O, Kimori K. Treatment of subungual glomus tumour. Hand Surg 2001;6:25-7.
8. Anakwenze OA, Parker WL, Schiefer TK, Inwards CY, Spinner RJ, Amadio PC. Clinical features of multiple glomus tumors. Dermatol Surg 2008;34:884-90.
9. Vasisht B, Watson HK, Joseph E, Lionelli GT. Digital glomus tumors: A 29-year experience with a lateral subperiosteal approach. Plast Reconstr Surg 2004;114:1486-9.
10. Santoshi JA, Kori VK, Khurana U. Glomus tumor of the fingertips: A frequently missed diagnosis. J Family Med Prim Care 2019;8:904-8.
11. Fraitag S, Gherardi R, Wechsler J. Hyperplastic pacinian corpuscles: An uncommonly encountered lesion of the hand. J Cutan Pathol 1994;21:457-60.
12. Baran R, Requena L, Drapé JL. Subungual angioleiomyoma masquerading as a glomus tumour. Br J Dermatol 2000;142:1239-41.
13. Ning X, Wang N, Yan H, Feng Y, Zhang Y. A nodule on the forearm. Dermatol Online J 2020;26:13030/qt7x251867. PMID: 32155031.
14. Miller JA, Moxon NR, Morency EG, Isaacson DS, Kundu SD. First presentation of a scrotal glomus tumor in an adolescent male: A case report. Urol Case Rep 2020;31:101175.