

Glomus tumour of the hands: A review of presentations and outcomes

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ABSTRACT

Introduction: Glomus tumour is a rare benign neoplasm of the normal neuroarterial structure called glomus body. They present with obscure symptoms making diagnosis difficult and delayed. Though classical symptoms and signs such as pain, temperature sensitivity, and point tenderness are described, imaging such as magnetic resonance imaging is increasingly being used for diagnosis. The aim of this study was to review the current understanding of glomus tumours of the hand in the context of the cases treated in Brunei Darussalam emphasising the importance of detailed clinical examination over imaging modalities. **Materials and Methods:** We present a series of seven patients diagnosed as glomus tumour and operated in our hospital from Sept 1997 to Sept 2009. Data was collected from the clinical and operative records regarding preoperative history and workup, intraoperative details, post-operative follow up and histopathology. **Results:** There were three male and four female patients with a median age of 37 years. All patients had severe fingertip pain on touch with positive Love's test. One patient had hypersensitivity to cold. Presumptive diagnosis of glomus tumour was made in six patients and foreign body granuloma in one patient based on detailed history and clinical examination alone. Histopathology confirmed glomus tumour in all the patients. All are asymptomatic after surgery. One patient had increased mitotic activity on histopathological examination and is on close follow up. **Conclusion:** High suspicion, detailed history and careful physical examination can significantly decrease the pre-operative morbidity of the patient with glomus tumour. An imaging study may not always be required for diagnosis.

Keywords: Glomus tumour, glomangiosarcoma, hypersensitivity, diagnosis, imaging

INTRODUCTION

Glomus bodies are normal neuroarterial structures that play an important role in ther-

moregulation.^{1, 2} Although they are mainly concentrated in the digits beneath the nails, they can be seen throughout the body. It is an endothelium-lined vascular cavity surrounded by clusters of glomus cells. Glomus cells are monomorphous, round or polygonal cells with plump nuclei and scant eosinophilic

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cytoplasm.¹ Benign neoplasms arising from the glomus bodies are called glomus tumours. Between 1% and 4.5% of tumours of the hand are glomus tumours. The most common age group affected is between 30 and 50 years of age.¹ It is usually difficult to diagnose due to the non-specific and vague symptoms, such as chronic pain and hypersensitivity. The mass is usually too small and difficult to be palpated on clinical examination. Furthermore, the classic triad of pain, temperature (cold) sensitivity, and point tenderness, may not always be present.² These lead to delayed diagnosis in most cases.

Several clinical tests have been found to be useful for diagnosing glomus tumors. Localisation of the tenderness to an area the size of a pinhead is suggestive of glomus tumour.³ The Love test has been reported to be 100% sensitive and specific.⁴ The cold-sensitivity test is considered to be positive when immersion of the affected hand in cold water results in severe pain in and around the lesion, in addition, to a history of cold weather aggravating the symptoms. This test is reported to have a sensitivity of 92% and specificity of 91%.⁵ Hildreth's test is another reliable clinical sign and is performed by elevating the patients' arm to exsanguinate it. A tourniquet is inflated to around 250 mmHg and pain and tenderness should be reduced when the tumour is palpated. A test is positive when sudden onset of pain and tenderness in the area of the tumour upon release of the pressure cuff. The reported sensitivity and specificity are 92% and 91% respectively. Plain radiographs may show bony erosions. Ultrasound can be used to aid the diagnosis, but it is operator and technique dependent.⁶ Magnetic Resonance Imaging

(MRI) is now considered the imaging modality of choice for the evaluation of glomus tumour.^{7,8-10} The treatment of choice is complete excision.^{1,10,11}

The aim of this study is to present the cases encountered in Brunei Darussalam and to emphasise the importance of detailed clinical examination over imaging modalities.

MATERIALS AND METHODS

From Sept 1997 to Sept 2009, seven patients were clinically diagnosed and confirmed to have glomus tumour and surgically treated by one of the author (GTA). Data was collected from the clinical and operative records on the age of patient, gender, location of the tumour, symptoms and signs, duration of symptoms before diagnosis, date of surgery and the results. Plain radiographic findings were also noted. Results were tabulated and analysed.

RESULTS

There were three men and four women with a median age of 37 years (range from 17 to 50). All patients had severe pain on touch with positive Love's test. One patient also had hypersensitivity to cold at the fingertip (positive cold-sensitivity test). One patient had a fish bone injury to his finger two months previously and presented with a granulating mass. With the exception of this patient none had any finger pulp mass or deformities of the nail.

Two patients had erosive changes in the radiography (Figure 1a). The patients were examined clinically and presumptive diagnosis of glomus tumour was made in six patients and foreign body granuloma in one.

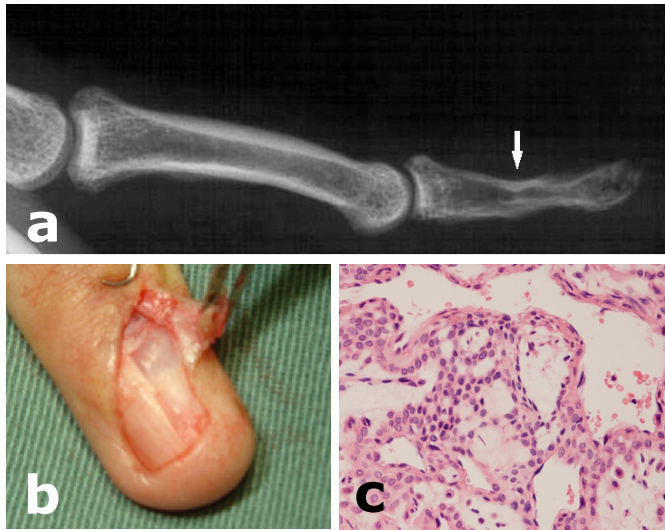


Fig 1: a) Plain radiography showing erosive changes (white arrow), b) Intra-operative picture showing a glomus tumour and c) Histology showing blood vessels surrounded by round cells in a fibrous stroma suggestive of glomus tumour (H&E stain, x40).

The median duration from symptoms onset to clinical diagnosis was six years (range from two months to 10 years).

All patients were treated with surgical excision through the lateral incision close to the margin of the nail accompanied with partial removal of the nail (Figure 1b). All the excised glomus tumours were solitary. Histological examination confirmed the diagnosis of benign glomus tumour composed of blood

vessels surrounded by a proliferation of round cells in a fibrous stroma in all cases (Figure 3). One patient had increased mitotic activity in the histopathology examination and had delayed wound healing. He is on close follow up. Pain and hypersensitivity on touching disappeared immediately after surgery in all patients. Recurrence of the symptoms was not observed at follow-ups of more than one year. The results are summarised in Table 1.

Table 1: Presentations of patients with glomus tumours.

No	Age and gender	Location	Symptoms	Time (symptoms onset to diagnosis)	X rays	Results
1	50/M	Right thumb	Pain Pin point tenderness	10 years	Normal	No pain
2	35/M	Right ring finger	Pain Pin point tenderness	6 years	Normal	No pain
3	37/F	Left ring finger	Pain Pin point tenderness	2 years	Normal	No pain
4	32/F	Right middle finger	Pain, pin point tenderness and cold hypersensitivity	8 years	Lytic lesion	No pain
5	38/F	Right ring finger	Pain and tenderness attributed to fish bone injury granulation	2 months	Normal	No pain
6	42/M	Left middle finger	Pain Pin point tenderness	2 months	Normal	No pain. FU due to mitotic activity
7	17/F	Left ring finger	Pain Pin point tenderness	8 years	Lytic lesion	No pain

DISCUSSION

Glomus tumour is a benign condition in which a complete excision usually leads to cure.^{1, 11, 12} The incidence of recurrence has been reported to vary from 5% to 50%.¹³ Apart from chronic pain, other complications include nail deformities. Treatment consists of complete local excision and close surveillance.¹⁵ Recurrence has been reported to occur in up to 20% of either due to incomplete excision or new lesion.¹⁴ Glomangiosarcoma is an exceptionally rare malignant variant of the glomus tumour. Although it is of low grade, it has a tendency for local recurrence after excision. Metastasis has also been reported.

Glomus tumours of the hand are associated with significantly morbidity as diagnoses are often delayed or missed. With a careful detailed history and physical examination, the differential diagnoses can often be narrowed down. However, clinical suspicion is always important. The three main clinical tests used are the Love's, cold-sensitivity and the Hildreth's tests.

Plain radiographs are usually not helpful. There may be bony erosions seen near the tumour, however this often occurs at the later stages of the disease.¹¹

MRI scan has now been recommended and widely used for the diagnosis of glomus tumour. As glomus tumour is vascular, it typically appears dark on T1 and bright on T2 weighted images with post-gadolinium and fat saturation images further delineating the mass. Although this is true with any vascular tumour, the location at the digits and its small size should lead one to suspect glomus tumour in most cases. Despite the usefulness

of MRI for diagnosis, it is not widely available and is costly. We showed that glomus tumour can be reliably diagnosed without the use of sophisticated imaging. However, for some cases, MRI scan will be useful.

We presented a series of seven patients where diagnoses were made with using any sophisticated imaging such as MRI. Of the seven patients, only in one case was glomus tumour not suspected. This patient had ignored earlier symptoms until the pain was made worse after the fish bone injury and was diagnosed with a foreign body granuloma. All the patients had obscure nonspecific chronic fingertip pain and hypersensitivity.

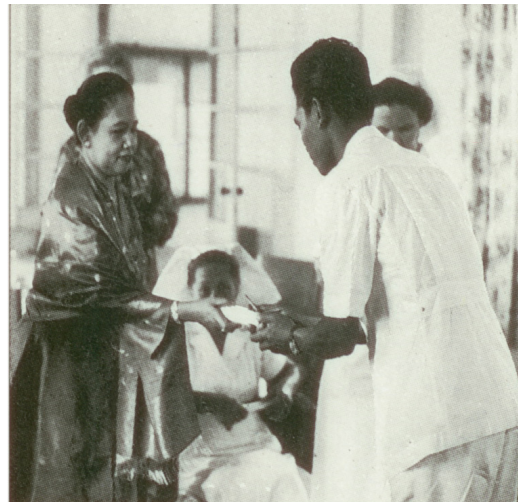
There are several limitations with our study. First, the sample size was small. Second, all the cases were seen and treated by a single surgeon. Therefore, we cannot be completely certain if there were other cases that might have been missed or overlooked. Given the difficulty with the diagnosis, it is also possible that cases have their diagnoses missed. However, such cases will eventually represent given the recurrent nature of the pain. After review of the surgical and pathology registries, these cases accounted for all the histology proven cases of glomus tumours treated in Brunei Darussalam.

In conclusion, the diagnosis of all the cases was made by careful detailed clinical examination with a high index of suspicion of glomus tumour in mind. Imaging studies may not always be required in the diagnosis of glomus tumours affecting the hands.

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Brunei Darussalam – Healthcare in Pictures



Visit to the Suri Seri Begawan Hospital, Kuala Belait by Al-Marhumah Duli Raja Isteri Pengiran Anak Damit. Picture on the left showing a group photo with Her Majesty and staff of Suri Seri Begawan Hospital. Seated next to Her Majesty (man in black suit) is the Director General of Health Service (Pehin Philip I Franks: refer to the Historical Pioneers section in the June Issue of the BIMJ 2011). Picture of the right showing Her Majesty handing out a certificate to a staff.