CASE REPORT

SUBUNGUAL GLOMUS TUMOR OF THE HALLUX
A CASE REPORT

M. KOTI, R. BHATTACHARRYYA, S. W. B. EWEN, N. MAFFULLI[1]

The authors report a rare case of subungual glomus tumor in the right hallux, which was excised with complete relief of symptoms. They provide a brief description of histological features and review the literature.

Keywords : glomus tumor ; subungual region ; MRI ; hallux.
Mots-cles : tumeur glomique ; région subunguéale ; IRM ; hallux.

INTRODUCTION

Glomus tumors are rare, and most likely to originate from the neuromyoarterial glomus. Soule *et al.* (5) reported 1.6% glomus tumors among 500 consecutive primary soft tissue tumors, and Kohout and Stout (4), comparing glomus tumors in children and in adults, reported multiple glomus tumors in 16 of 685 adults, but a higher incidence (31 cases in 117 patients) in patients younger than 16 years. The subungual and digital varieties are more common in females, while proximal lesions are more common in males. Familial occurrence has also been reported. Due to its rare occurrence in the toes and its small size, the diagnosis may not be readily apparent. We report a subungual glomus tumor affecting the right hallux.

CASE REPORT

A 31-year-old woman presented with a several year history of intermittent pain over the base of the nail bed of the right hallux. The pain initially was localized, but progressed to radiate proximally along the right leg. Attacks of pain occurred almost every day at any time with no periodicity, and had no relation to weight bearing. She was very cautious in avoiding the slightest pressure on her toenail, as it caused her pain. She reported a history of minor trauma to the right hallux two years before presentation, and had noticed a slight bluish discoloration over the base of the nail of her right hallux several months before coming to our attention. Oral analgesia failed to relieve her symptoms. General examination was unremarkable. The right hallux showed a bluish discoloration of approximately 1 cm in diameter at the base of the hallux nail. This area was hyperesthetic and very tender on slightest pressure, reproducing the pain radiating to her leg. Interphalangeal and metatarsophalangeal joint movements of the hallux were normal and painless.

Laboratory analyses were normal. Radiographic examination of her right hallux was normal. Magnetic resonance imaging (MRI) examination taken as sagittal short T1 inversion recovery (STIR) images showed a high intensity (bright) signal around the nail bed, indicating increased blood

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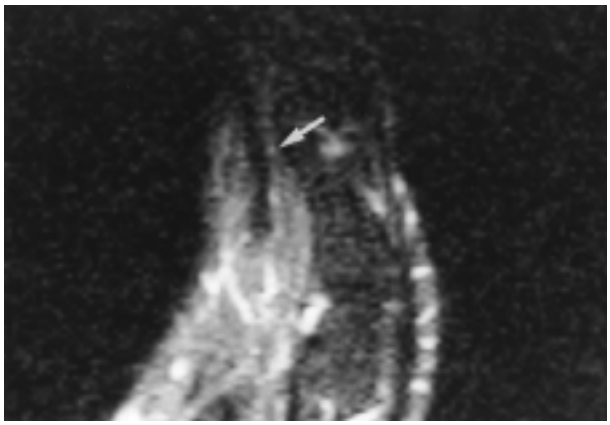

***Fig. 1.* —** MRI appearance. High-intensity (bright) signal around the nail bed, indicating increased blood flow. The arrow points at the site of the glomus tumor.

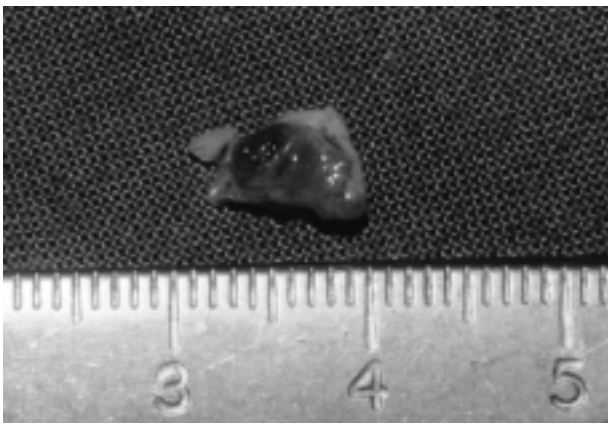

***Fig. 2.* —** Gross appearance of the glomus tumor following excision.

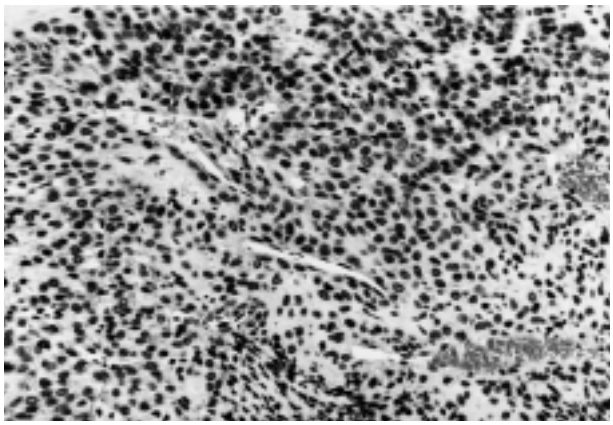

***Fig. 3.* —** High-power photomicrograph (magnification x 200) showing abundant glomus cells and several vascular channels lined by a single layer of flattened endothelial cells.

flow and suggesting a possibility of a glomus tumor (fig. 1).

Operative procedure

With the patient under general anesthetic and a bloodless field furnished by an ankle tourniquet, the toenail was excised using Zadik's technique. The nail bed was exposed and the area of discoloration was excised (fig. 2). The nail fold was closed with two sutures applied at the corners of the nail bed. The patient was discharged home on the day of the operation. Recovery was uneventful, and at the latest review, 3 months after the operation, the patient was asymptomatic and requested to be discharged from our care. Further telephone enquiries revealed that the patient had returned to the activities of daily living and was asymptomatic.

Histopathology

Gross appearance showed a brownish nodule 7 mm by 5 mm in diameter (fig. 2).

Histologically, the brownish nodule was composed of several vascular channels lined by a single layer of flattened endothelial cells. Peripheral to the endothelial cells were multiple rows of glomus

cells and masses of glomus cells, in which no vascular lumen could be identified (fig. 3). The appearance was typical of glomus tumor.

DISCUSSION

The size of a normal glomus or neuromyoarterial body varies between 120 to 220 microns (1). It is an end-organ apparatus of arteriovenous anastomosis without an intermediary capillary bed. This arteriovenous shunt is probably involved in regulation of heat production (2). The normal glomus begins to appear a few months after birth, becoming fully developed in adulthood, and atrophies after the age of 60 (1). Glomi are widely distributed, most frequently beneath the nails and on the ventral surface of the fingertips. Glomus tumors are usually less than 1 cm, the largest reported being 1.5 inch by 1 inch. Congenital glomus tumors have been reported (4), and in a minority of cases there may be a history of preceding trauma (3, 4). They can be associated with neurofibromatosis (4). Microscopically, a glomus tumor consists of collections of uniform cells that appear somewhat epithelial in nature with finely granular, nonfibrillar, eosinophilic cytoplasm and a small, round nucleus. These cells lie along the outside of abundant vessels (3). Four types of glomus tumors are described : angiomatous, paucivascular, neuromatous and mucoid hyaline (1). Although it is difficult to categorize them, owing to the frequent mixture of various types, the angiomatous component usually predominates (1, 3). There is no true capsule, and, if present, it is probably a secondary reaction of surrounding tissues (3), which may show persistent infiltration in 1 to 2% of cases, without any evidence of malignant changes (4). Myelinated and nonmyelinated nerve fibers may be demonstrated by special stains (3), and may be found in the capsule and extracapsular region (5). The pain may result from change in the vascularity distorting the capsule (3) or may originate from the tumor itself (4). Pain, tenderness and cold sensitivity form a diagnostic triad (4). Pain can be so severe and persistent that drastic procedures, including amputation, have been carried out, although painless glomus tumors are also reported (5). In some patients, the tumor becomes blue during an attack of pain. Bony erosions may be seen, particularly in subungual cases, but none was demonstrable in this case. Surgical excision, if complete, results in total relief of symptoms. Indeed, this was what happened in our patient who regained full painless function after the surgical wound had healed and has remained asymptomatic since.

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SAMENVATTING

M. KOTI, R. BHATTACHARRYYA, S. W. B. EWEN, N. MAFFULLI. Subunguinaal glomustumor van de grote teen. Beschrijving van een geval.

Naar aanleiding van een zeldzaam glomus gezwel onder de nagel van de grote teen, met succes behandeld door excisie, wordt de literatuur hieromtrent overlopen en de histologie besproken.

RÉSUMÉ

M. KOTI, R. BHATTACHARRYYA, S. W. B. EWEN, N. MAFFULLI. Tumeur glomique sous-unguéale du gros orteil : présentation d'un cas.

Les auteurs présentent un cas rare de tumeur glomique sous-unguéale du gros orteil où l'excision chirurgicale a amené la disparition complète des symptômes. Ils décrivent brièvement les aspects histologiques de la lésion et présentent une revue de la littérature.