

Case Report

Pacinian corpuscle neuroma: A rare case report with review of Literature

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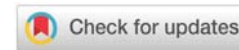
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Abstract

The authors discuss an interesting case of a Pacinian corpuscle neuroma in the finger of a young woman who presented with severe digital pain. The clinical signs were very prominent. The patient had complete pain relief following excision of the tumor. Pacinian corpuscle neuromas are rare, with only about few cases reported in the literature. The histology, presenting features and associated conditions are discussed in detail. In addition to a neuroma or glomus tumor, Pacinian corpuscle hyperplasia should be considered in the differential diagnosis of digital or palmar pain of unknown etiology.

Introduction

Neural tumours composed exclusively of Pacinian corpuscles or showing focal Pacinian differentiation are extremely rare and have only occasionally been reported in the literature. Pacinian corpuscles are mechanoreceptors found in man and other animals. They are distributed in the dermis from the fingers and palm of the hand, the conjunctiva, near joints, in the mesenteries, branching blood vessels, penis, urethra, clitoris, parietal peritoneum and loose connective tissue. The Pacinian corpuscle is a pressure receptor that responds to high-frequency vibratory stimuli. The corpuscle is fluid filled and essentially incompressible. It consists of a single nerve fibre, the terminal region of which is enclosed in a multilaminated connective tissue capsule. The nerve is myelinated except for the terminal region within the capsule, which is nonmyelinated. The corpuscle transmits mechanical stimuli through the connective tissue lamellae and fluid, exciting the nonmyelinated receptor axon in its core (Figure 1). These end-organs are the only sensory receptors that are

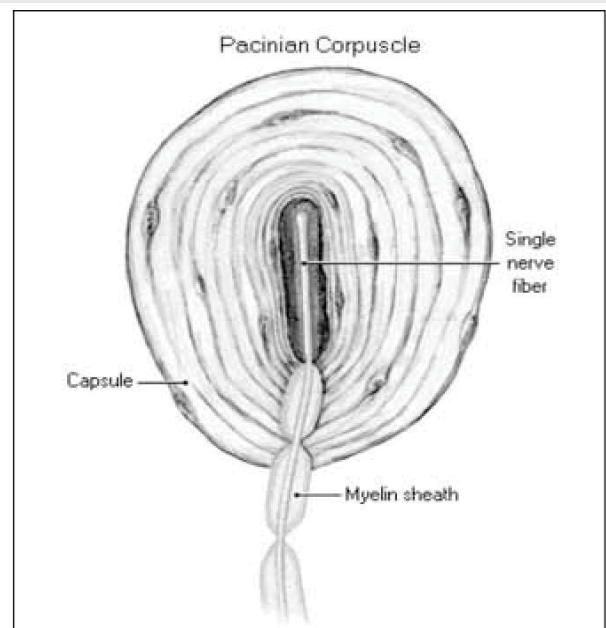


Figure 1: Structure of a Pacinian Corpuscle.

large enough to be identified and dissected in the anatomy laboratory. They should be looked for when dissecting the palm of the hand and fingers. There are approximately 300 Pacinian corpuscles in the hand. They are distributed in fingers (60%), near the metacarpophalangeal joints (25% to 48%) and in the thenar and hypothenar regions (8% to 18%) [1]. A neuroma may sometimes arise from this Pacinian corpuscle. We present an interesting case of a woman with Pacinian corpuscle neuroma of the thumb.

Review of literature

Pacinian corpuscle neuroma is an uncommon lesion with a limited number of cases reported. This lesion can be called variably as Pacinian corpuscle hyperplasia or Pacinian corpuscle neuroma [2-7]. The most common site of this lesion is the hand, where it presents as painful swelling. A prior history of trauma may be elicited in a majority of the patients and it may be associated with foreign body reaction [8]. Presentation may vary from digital pain to macrodactyl [2-8]. Differential diagnosis of glomus tumor should always be kept in mind when disease involves the digital pulp. Similar lesions have been described in other parts of the body as well. They include Pacinian neuroma of vulva, Pacinian hyperplasia of foot, sacrococcygeal pacinioma and intraperitoneal pacinian neuroma [9-13]. Pacinian corpuscle neuromas may be associated with other lesions such as glomus tumour, Dupuytren's contracture, multiple Pacinian neuroma and arteriovenous anastomoses [14-16].

Case presentation

A 32-year-old female patient presented to the Department of Orthopaedics with pain of right thumb since last 8 months. The pain was diffuse and severe over whole of the thumb and was even tender to light touch. There was no history of previous pain. On examination, there was normal skin and nail complex. Flexor tendons were intact with no compressibility, pulsations or thrill and no distal neurovascular deficit. A provisional diagnosis of a Glomus tumour was made. Routine blood investigations, ECG, chest X-ray, X-ray of the right hand and an MRI were done. X-ray showed normal bone architecture. MRI revealed an intensely enhancing T2 hyperintense lesion on medial aspect of nail bed suggestive of Glomus tumour (Figure 2). Based on the reports excision and biopsy of the lesion was planned. A linear incision was made on the medial aspect under local anaesthesia using 2% lignocaine and tourniquet control (Figure 3). Immediately in the subcutaneous plane, shiny clusters of mass were seen clumped together and they seemed to be under tension. All of the visible masses were excised. Primary closure was performed. The excised mass was sent for histopathological examination. Histopathological features were consistent with a Pacinian corpuscle neuroma (Figures 4,5). Postoperative period was good. Patient was discharged on the 2nd postoperative day and skin sutures were removed on the 14th postoperative day. One month hence, the patient had complete pain relief. Finger movements were near normal. Post operative period was uneventful and no recurrence was noted in post operative period.

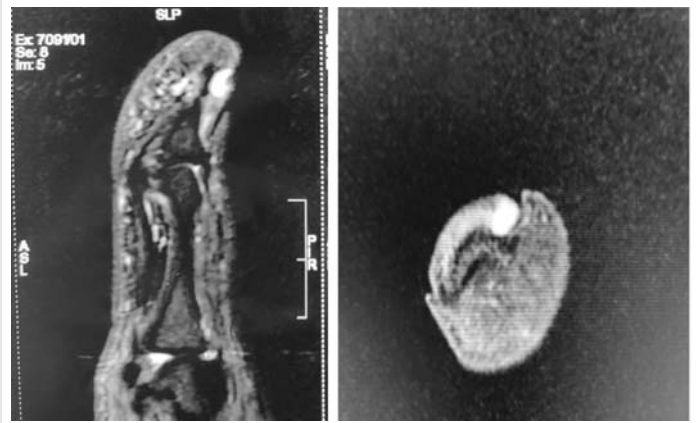
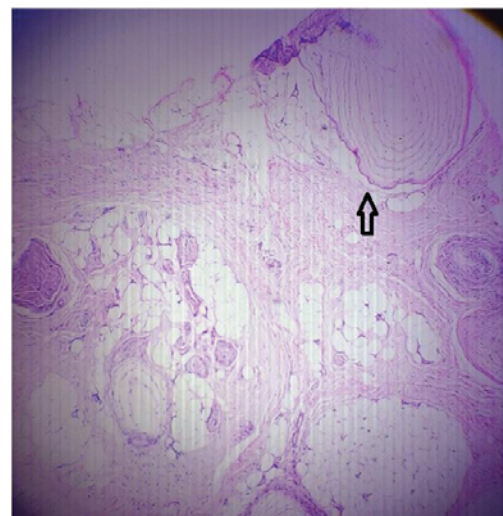


Figure 2: MRI images of the lesion.



Figure 3: Linear incision along the line of tenderness.



Arrow shows a pacinian corpuscle surrounded by lymphocytes and adipose tissue

Figure 4: showing pacinian corpuscle surrounded by lymphocytes and adipose tissue.

Conclusion

When making a differential diagnosis of unexplained severe pain in the hand, Pacinian corpuscle should be considered in addition to benign tumors of non-neural origin, such as hemangiomas, fibromas, ganglion cysts, mucoid cysts and angiolipomas, and neural origin, including schwannomas and glomus tumors, as the cause of a tender digital papule. Several autoimmune diseases such as gout, exostosis, and arthritis



can also present as this condition [17]. The symptoms of this disease are usually alleviated after complete resection. The definitive diagnosis and treatment of this disease are possible if surgical resection is performed after careful consideration of differential diagnoses. Any dermatologist making a differential diagnosis of unexplained severe pain in the finger must take into account Pacinian neuroma, in addition to glomus tumor and other types of painful soft-tissue tumor.

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