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Case Report
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Multiple Ancient Type Schwannoma of Medial Plantar Nerve: A Clinical Rarity

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Abstract

Multiple schwannomas, especially of Ancient type, on the plantar aspect of the foot are very rare. We report one such case of sporadic multiple ancient type schwannomas involving medial plantar nerve in an adult female patient. Magnetic Resonance Imaging (MRI) of right foot along with Nerve Conduction Study (NCS) was done in preoperative evaluation. MRI showed the lesion to be a neurogenic tumor arising from medial plantar nerve. Patient underwent excision of these lesions which later proved to be ancient type of multiple schwannomas on histopathological examination. The patient recovered very well without any residual neurological deficit of medial plantar nerve.

Keywords: Schwannoma; Peripheral nerve sheath; Medial plantar nerve

Introduction

Schwannoma is a benign, peripheral nerve sheath tumor which occurs most commonly in 20 to 50 years age group and manifests about 5% of benign soft-tissue neoplasm [1,2]. Schwannomas usually involves head, neck, flexor surfaces of extremities and nerves [2,3]. Schwannoma, also known as neurilemmoma are benign homogeneous tumors of the nerve sheath, usually slow growing, consisting of Schwann cells which produce myelin. Ancient-type schwannomas are schwannomas with histological evidence of degenerative cystic and calcific changes. These grow along the nerve sheath causing symptoms through compression of the nerve and the surrounding structures. Only 1% of these undergo malignant transformation to become a neurofibrosarcoma [3]. Schwannomas can be sporadic or may be associated with genetic and familial predisposition as with neurofibromatosis type 2 (NF-2) or carney's complex. We report one such rare case of Non-syndromic sporadic multiple ancient type schwannomas involving medial plantar nerve treated with excision without causing damage to the medial plantar nerve with a completely uneventful postoperative recovery without any residual neurological deficit.

Case Presentation

A 40 year old female came with complaints of gradually increasing Pain and swelling at the plantar aspect of right foot of six years duration. Patient did not have any syndromic manifestations thus ruling out any syndromic association with neurofibromatosis type 2 (NF-2) or carney's complex. On Clinical examination, three swellings were identified on the plantar aspect of right foot at the level of fore-foot (5cm × 2 cm), Mid-foot (3 cm × 2 cm) and Hind-foot (2 cm × 2 cm). Tenderness was present over the swellings (Figure 1). Magnetic Resonance Imaging (MRI) showed these to be ovoid, intensely enhancing lesions along the plantar aspect of fore-foot, mid-foot and hind-foot suggesting provisional diagnosis of neuroma or nodular synovitis or sarcoma. MRI Brain was also done to rule out any synchronously occurring lesions in the brain such as acoustic neuroma (Figure 2). Nerve Conduction Study (NCS) was done for documentation purpose to rule out presence of any neurological deficits as it had a long standing occurrence. These lesions were surgically excised under magnification without causing damage to the medial plantar nerve under the spinal anesthesia and tourniquet control. The excised lesion was sent for histo-pathological examination and the macroscopic examination showed fore-foot lesion to be 5.2 cm × 3 cm × 1.8 cm, Mid-foot lesion to be 3 cm × 1.6 cm × 1.4 cm and hind-foot lesion to be 1.1 cm × 0.6 cm × 0.5 cm in size. The microscopic examination reveals a neoplasm composed of hyper cellular Antoni A areas and Hypo cellular Antoni B areas with cellular areas showing elongated plump nuclei and eosinophilic fibrillary cytoplasm with indistinct cell borders and presence of verocay bodies suggesting ancient type of schwannoma (Figure 3). Postoperative outcome was without any neurological deficit and patient is walking without any sensory deficit.

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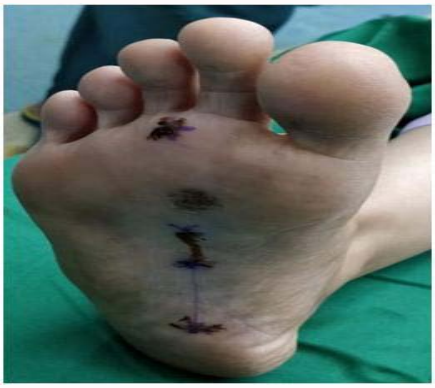

Figure 1: Multiple Ancient schwannoma of medial plantar nerve-preoperative view.

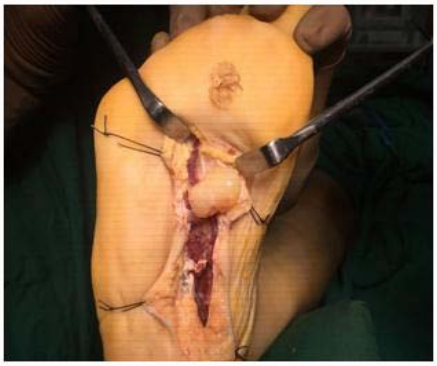

Figure 2a: Ancient schwannoma of medial plantar nerve-intraoperative view.

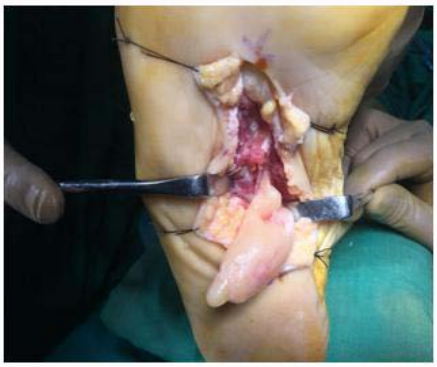

Figure 2b: Ancient type schwannoma during excision-intraoperatively.

Discussion

Schwannoma is a benign encapsulated slow growing tumor. Ancient Schwannoma is a very rare peripheral nerve sheath tumor with degenerative calcific and cystic changes. Unlike neurofibromas, schwannomas do not traverse through the nerve but remain in the sheath lying on top of the nerve. Treatment of these lesions involve carefully identifying the proximal and distal ends of the schwannoma of involved nerve and carefully dissecting through its fibrils to remove the schwannoma along with its covering capsule [4,5]. In some instances excision of the involved part of the nerve becomes inevitable leading to excision followed by nerve repair, either by primary suturing or with a nerve graft as alternatives. In this case the medial plantar nerve was carefully identified at its proximal and distal

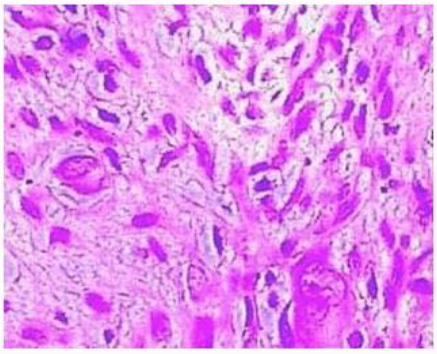

Figure 3: Microscopic examination showing hyper cellular Antoni A areas and Hypo cellular Antoni B areas with elongated plump nuclei and eosinophilic fibrillary cytoplasm with indistinct cell borders and presence of verocay bodies.

ends of lesion and the schwannomas removed carefully along with its covering capsule. In literature, we could find very few case reports of schwannomas involving the posterior tibial nerve and some involving medial and lateral plantar nerve but we could only find one case report of ancient type schwannoma involving the medial plantar nerve of foot [4-10]. The mean age of patients in these case reports were 50 +/- 2 years while patient having schwannoma on the plantar aspect of foot in the case report published by Xiao-na Li et al., [9]. Was 19 years as opposed to 40 years in our patient? We reported case in female patient which is the gender of majority of patients in other studies. In patients with medial plantar nerve schwannoma, neuropathic pain along the plantar aspect of foot followed by swelling was the most common presentation Neuropathic pain which increased on walking and multiple swellings over plantar aspect of foot was the symptom complex with which patient presented to our clinic [6,9-11]. This was comparable with other studies in which neuropathic pain and presence of swelling was the most common presentation [5,6,8,9,11]. All patients in published case reports and studies presented with a solitary lesion while our case report is first of its kind to document Multiple Ancient type schwannomas involving medial plantar nerve. All patients in the published case reports had history of long duration of these swellings and MRI was used as diagnostic modality to identify the exact nature and location of these lesions. However, in our patient we used Nerve conduction studies to document any evidence of neurological deficits along with MRI as a diagnostic modality, in view of lesions being multiple and long standing. NCV study was unique to our case report as to document any pre-existing compressive neuropathy. Patient did not have any syndromic manifestations thus ruling out any syndromic association with Neurofibromatosis type 2 (NF-2) or Carney's complex, as in other studies. As per the treatment modality used, careful surgical excision without damaging the involved medial plantar nerve was done. In a study done by DH Nawabi et al., [6] two out of twenty five patient required excision of involved segment followed by nerve repair. Postoperative recovery was uneventful with no residual neurological deficit. In the study conducted by DH Nawabi et al., [6], two out of twenty five patients had residual defects in the form of loss of sensation over plantar aspect of foot.

Conclusion

Ancient-Type Schwannoma is a very rare peripheral nerve sheath tumor with degenerative calcific and cystic changes. Our purpose of reporting this case is to keep in mind as one of the possible differential

diagnosis in cases of peripheral nerve sheath tumors to be of ancient type schwannomas. These lesions can be successfully treated with meticulous surgical excision with a very favorable postoperative outcome without any residual neurological deficit.

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