



Plantar Nerve Neural Fibro-Lipoma – Rare Neuroma Arising from the Plantar Nerve of the Heel

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Abstract

Every year, as many as 2 million patients worldwide present with plantar heel pain with men and women affected equally. This case reports reflects upon a healthy 46 year old female who presented with subtype of true neoplasm called a neural fibrolipoma arising from the plantar nerve. The patient was referred by her GP for an evaluation of an unknown painful soft tissue mass present in the right plantar aspect of the mid foot. The mass had been present for approximately 2 to 3 years and had recently increased in size in the last 4 months. This 17 mm × 7 mm × 11 mm painful soft tissue swelling was detected by USS and showed it extended deep to the plantar fascia not arising from it hence ruling out the common misconception of plantar fibromatosis.

When reviewing such patients, it is imperative to rule out any malignancy before excising the mass which is why referring this patient to a Sarcoma MDT was essential. Other infectious differentials including septic arthritis and osteomyelitis were ruled out early since Blood counts showed CRP – 1.2 mg/L, White cell count – $5.1 \times 10^9/L$, Neutrophils – $3.47 \times 10^9/L$. Arthritic differentials such as Gout were also ruled out based on blood parameters which revealed Urate – 287.

The patient opted for surgical excision biopsy of the lesion. Post operative period was uneventful with good healing of the wound She was followed up 2 months and at with the histology findings results revealed a rare soft tissue neural neoplasm in keeping of a neurofibrolipoma. The patient was happy with the overall outcome and discharged. This case report highlights the need to consider the neural fibrolipoma as a rare case of plantar/heel pain and excision of the lesion would provide an excellent outcome.

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Introduction

A neuroma can be defined as benign tumour of nerve tissue. Neuromas can be differentiated into 3 categories. Firstly a true neuroma, secondly neuromas associated with trauma and finally neuromas as part of a syndrome such as neurofibromatosis or MEN2b. Neuromas are overlooked as a differential diagnosis for heel pain, and they are diagnosed by a combination of physical examination, history taking, and radiological imaging and by histopathological findings following excision.

A Neural fibrolipoma, also known as a lipofibromatous hamartoma is a benign, soft-tissue neoplasm generated by the proliferation of mature nerve sheet fibroblast and adipocytes leading to the formation of a palpable subcutaneous mass. The exact pathogenesis of a neural fibrolipoma is unknown however chronic irritation and trauma have known to play a precipitating factor. Often seen in nerves with high risk of compression such as the median nerve, it is very rare to present in the plantar nerve.

Case Presentation

A healthy 46-year-old female who was referred by her GP for an evaluation of a painful soft tissue mass present in the right plantar aspect of the mid foot. The mass had been present for approximately 2 to 3 years and had recently increased in size in the last 4 months. The patient described the feeling as walking on a hard stone. There was no history of trauma or significant family history. Upon inspection there was no apparent infection or skin changes. Upon examination the patient had bilateral planovalgus feet with bilateral hallux valgus worse on the right side. This swelling had led to chronic pain with some sensitivity and numbness over that area. Following



Figure 1: USS Right foot plantar showing mass deep to plantar fascia.

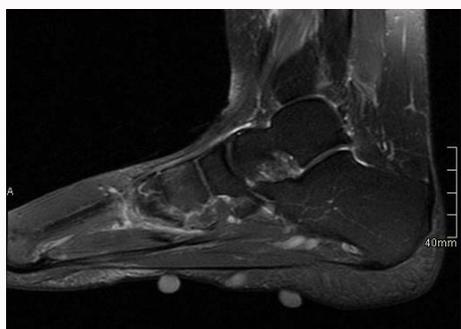


Figure 2: MRI with contrast – right foot - sagittal view.

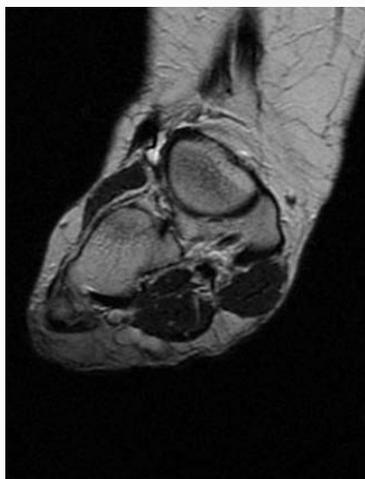


Figure 3: MRI with contrast – right foot - T2 coronal view.

the patients' first appointment the patient received an injection of 80 mg Depo-medrone and 1 ml of 1% Lignocaine under ultrasound guidance into the second MTP to temporarily provide symptomatic relief for the pain whilst an ultrasound was arranged to rule out plantar fibromatosis. X-rays ruled out any bony injury or obvious bone malignancy.

USS described this swelling in the plantar aspect of the mid-foot as well defined, hypoechoic tender lesion within the plantar subcutaneous tissue measuring approximately 17 mm × 7 mm × 11 mm. More importantly the lesion extended deep to the plantar fascia

not arising from it hence ruling out plantar fibromatosis (Figure 1). In order to rule out any aggressive pathology an MRI with contrast was arranged which revealed a 2 cm by 5 mm tubular oblique lesion in the plantar subcutaneous fat. MR imaging was also able to rule out sinus tarsi syndrome and any internal derangements (Figure 2, 3). She was referred to orthotics for a medial support arch to help with pain. Since the exact characteristics of this lesion were still unknown the case was referred to the Yorkshire Sarcoma MDT. The outcome of this meeting concluded that there were no radiological features of a sarcoma. She still experienced excruciating, sharp stabbing pain in her right foot. Pain score was 10/10. She opted for surgical excision biopsy of the lesion. The post operative period was uneventful with good healing of the wound. She was followed up 2 months and at with the histology findings results revealed a rare soft tissue neural neoplasm in keeping of a neurofibrolipoma. The patient was happy with the overall outcome and discharged. She was reviewed again after 2 years for a further foot and ankle problem in the other foot and at the time of review she was completely pain free in the right foot with an excellent outcome.

Discussion

A true neuroma can come in various sizes and locations including a vestibular schwannoma, acoustic neuroma, ganglioneuroma, neurothekeoma, nerve sheath myxoma. These neuromas have their own unique characteristics and origin. The true incidence of many these neuromas vary in different literature as often neuromas go undetected until they become symptomatic. In the cases of an acoustic neuroma or vestibular schwannoma patients can present with tinnitus hearing loss and vertigo. In this case the patient presented with chronic pain in her right foot.

When reviewing such patients, it is imperative to rule out any malignancy before excising the mass which is why referring this patient to a Sarcoma MDT was essential. Other infectious differentials including septic arthritis and osteomyelitis were ruled out early since Blood counts showed CRP – 1.2 mg/L, White cell count – $5.1 \times 10^9/L$, Neutrophils – $3.47 \times 10^9/L$. Arthritic differentials such as Gout were also ruled out based on blood parameters which revealed Urate – 287. Given that the pain was focused on the plantar aspect of the heel and not primarily in the posterior heel conditions such as Achilles tendonitis, retroachilles bursitis or retrocalcaneal bursitis were ruled out. Furthermore, given the age of the patient was not an adolescent Severs disease (calcaneal apophysitis) was also excluded [1-6].

It is important to recognize that this true neuroma originated from a peripheral nerve such as the medial plantar nerve and not from the inter-digital nerve as that would make it a Morton's neuroma.

During excision the medial plantar nerve was preserved ensuring the patient preserved motor function of the abductor hallucis, flexor digitorum brevis, the flexor hallucis brevis and the first lumbrical muscle.

Conclusion

This case report highlights the need to consider the neural fibrolipoma as a rare case of plantar/heel pain and excision of the lesion would provide an excellent outcome.

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