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Plantar Fibromatosis: A case report

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We report the case of a 30 year-old Indian female with no family history or cytogenetic abnormality who presented with a nodular fibrotic thickening of the right plantar fascia. She underwent a subtotal plantar fasciotomy with no recurrence at 2 years follow-up. This is the first case report of plantar fibromatosis from the Indian subcontinent.

Key words: Ledderhose's syndrome, Plantar fibromatosis, heel pain, swelling.

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Plantar fibromatosis is a disorder of fibrous tissue proliferation, characterized by a slow-growing nodular thickening, most often within the central band of the plantar aponeurosis. The fibromatotic process grows slowly and invades the skin and deeper structures.[1] The similarities of this condition to those observed in palmar fascia (Dupuytren's disease) seem to support the theory that the two diseases are expressions of the same disorder.[2] Although much has been discussed about Dupuytren's contracture in the international literature; little or no information is available regarding plantar fibromatosis from the Indian subcontinent. We present a case of a young woman with isolated disease of her right sole and describe the clinical and pathomorphological features of this rare clinical entity.

Case report

A 30 year-old housewife presented to our out-patient department with a history of painful swelling of her right sole. (Fig.1) The swelling appeared six years ago and was gradually progressive. It is associated with a dull aching type of pain which on later stages prevented her from walking even small distances. On examination, she had multiple nodular, non compressable swellings in her right sole. The biggest nodule measured 2 cm in diameter. The swellings were tender to touch with no local rise in temperature. The skin over the swelling was normal. No flexion contracture of toes[2] or neurovascular deficits was noted. Motion of the foot and ankle were within the normal range. The examination of skin and subcutaneous tissues elsewhere in her body and the palms did not reveal any similar swelling. The patient denied any history of diabetes mellitus[3], epilepsy, chronic liver disease or keloidal tendencies.[4]

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Figure 1 Plantar swelling.

Family history was negative. Roentgenographic and hematological investigations were within normal limits, except for a raised ESR (44 mm fall/hour). A presumptive diagnosis of plantar fibromatosis was made on clinical grounds.[5]

The patient underwent subtotal plantar aponeurectomy through an extensile lazy 'S' shaped plantar incision avoiding the weight bearing part of the foot.[6] (Figs. 2 and 3)

Intra-operatively the nodules arising from the plantar fascia were grayish in color, firm to hard in consistency and appeared to be attached to the underlying muscles and the medial plantar neural bundle, which had to be excised with the swelling. The skin flaps healed without necrosis and sutures were removed two weeks after the surgery. (Fig.4) The patient was advised to wear a soft sole shoe and weight bear as tolerated a week after suture removal.

Histopathology of the excised specimen revealed spindle shaped cells and collagen fibers arranged in fascicles and nodules. (Figs 5 and 6) Mitotic figures were absent from the lesion and the margins were found free from atypical spindle cells. Cytogenetic analysis was normal. The patient did not receive post operative radiation.

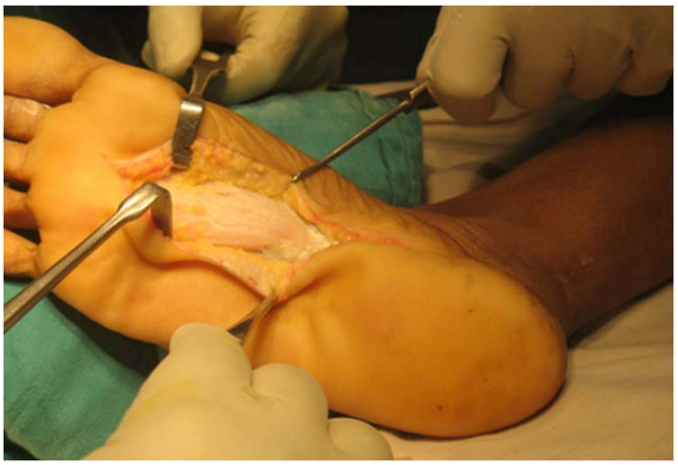

Figure 2 Fibromatotic nodules seen on exploration.

Figure 3 Excised specimen of plantar fascia.

Figure 4 Healed scar after suture removal.

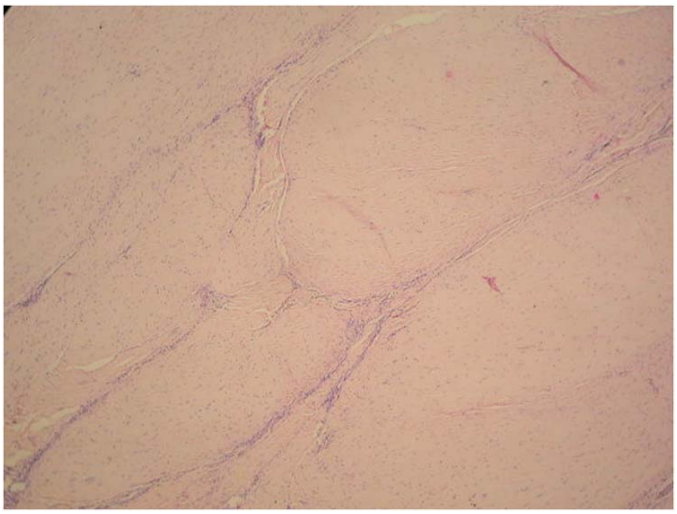

Figure 5 Photomicrograph showing the fibromatotic process (haematoxylin and eosin x 25) arranged in fascicles and at places forming nodules.

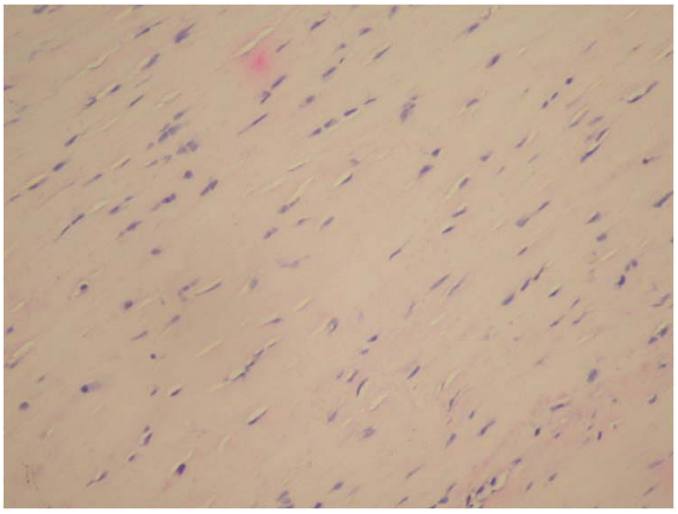

Figure 6 Photomicrograph showing spindle shaped cells and collagen fibers arranged in fascicles (haematoxylin and eosin x 100).

She was pain free about a month after the surgery; however she complained of tingling and numbness in the medial three toes. The numbness gradually disappeared and at 2 years follow-up she was symptom free without any evidence of recurrence. The post-operative weight bearing radiographs did not reveal a decrease in the calcaneal pitch angle, navicular height, and medial cuneiform height at final follow up of 2 years.

Discussion

Ledderhose's syndrome or plantar fibromatosis is a benign but infiltrative neoplasm with the replacement of the plantar aponeurosis with abnormal fibrous tissue. If left untreated, the disease may progress to irreversible contracture of the toes followed by inability to walk. To the best of our knowledge plantar fibromatosis has never been reported from the Indian subcontinent. The fibromatotic process affecting the plantar fascia assumes greater significance in our population as many walk with bare feet. Early surgical intervention in plantar fibromatosis once the nodules are prominent and causing pain is therefore suggested in our population.

Contrary to Skoog[7], the authors of this case report believe that micro-trauma is an unlikely etiology in the development of plantar fibromatosis in the Indian population where many walk with bare feet. The classical age of presentation is in young adults, although the paediatric and preadolescent population can present with asymptomatic, bilateral nodules on the anteromedial heel pad.[8] These patients usually have a positive family history and the fibromatotic process shows spontaneous regression and can safely be observed.[9,10]

Plantar fibromatosis is associated with palmar fibromatosis, penis plasticus (Peyronie's disease), knuckle pads, keloids, firm subcutaneous and sub mucosal nodules elsewhere in the body. Frozen shoulder and epilepsy have been reported by various authors in the past couple of decades.[4] Although recurrent lesions are fairly common, we have not found any evidence in the literature to indicate plantar fibromatosis pursues the course of a malignant neoplasm. Magnetic resonance imaging (MRI) is a non-invasive method for confirmation of the clinical diagnosis and also has an important role in planning surgical treatment by delineating the extent of the lesion.[11]

Although Sawyer[12], et al., reported on balanced reciprocal translocation (2; 7) (p13; p13) and Breiner[13],et al., on Trisomy 8 and 14, we did not encounter any cytogenetic abnormality in our patient. Conservative management may be applicable in individuals with no or mild symptoms and includes padded shoe with insoles tailored in such a way as to transfer the weight away from the prominent nodules.[1] For those suffering from pain and local aggressiveness as evidenced by clinical examination and MRI, surgery in the form of wide radical excision offers the best outcome.[1,14] Similar to Boc, et al.,[15] we found the fibromatotic process engulfing the medial plantar nerve which had to be sacrificed along with the specimen. Although effective in decreasing the recurrence rate, adjuvant radiotherapy should be used very selectively because of its serious side effects.[16, 17] Judging from the available data, recurrence did not appear to be related to any specific clinical or pathologic feature.

Conclusion

We feel that although a presumptive diagnosis can be made on clinical grounds alone, MRI may delineate the extent and local involvement of the fibromatotic process. Tumor free margins are an essential prerequisite to avoid local recurrence. A subtotal resection of the plantar aponeurosis to relieve symptoms and prevent progression seems to be the best treatment option in symptomatic patients.

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