
Use of magnetic resonance imaging as a noninvasive technique to identify acral lentiginous melanoma



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CLINICAL CHALLENGE

Acral lentiginous melanoma may be a diagnostic challenge because the classic criteria for diagnosing pigmented lesions (asymmetry, border irregularities, color variegation, change in diameter) are often not apparent. Melanomas of the foot and ankle are frequently misdiagnosed as ulcerations, tinea pedis, and verrucae,¹ leading to a delay in diagnosis and progression of disease.

SOLUTION

To help differentiate acral lentiginous melanoma from other pigmented lesions, this technology pearl presents the use of magnetic resonance imaging as a noninvasive technique to identify melanoma. A 76-year-old woman presented with a 10-year history of a small soybean-like lesion on the right heel. The lesion gradually increased and had an ulcerated area with black margins for 1 year. Magnetic resonance images showed an abnormal signal nodule on the heel (Fig 1, A), with internal hyperintense on T1-weighted image (WI) (Fig 1, B) and internal hypointense on a T2WI (Fig 1, C). The patient had surgical resection, and histopathologic analysis showed malignant melanoma. Immunohistochemical staining results were positive for human melanoma black (HBM-45). Melanoma typically appears hyperintense on T1WI and hypointense on T2WI owing to the paramagnetic properties of melanin.² On the contrary, nonmelanoma usually appears hypointense on T1WI and on hyperintense T2WI (Fig 2). The limitation of the technique is that a sizable module is needed before melanoma can be detected; hence, it has some restrictions for early melanoma detection. Because malignant melanoma is responsible for approximately 79% of skin cancer deaths,³ magnetic resonance imaging can provide some useful information for the preliminary diagnosis of melanoma and timely surgical program.

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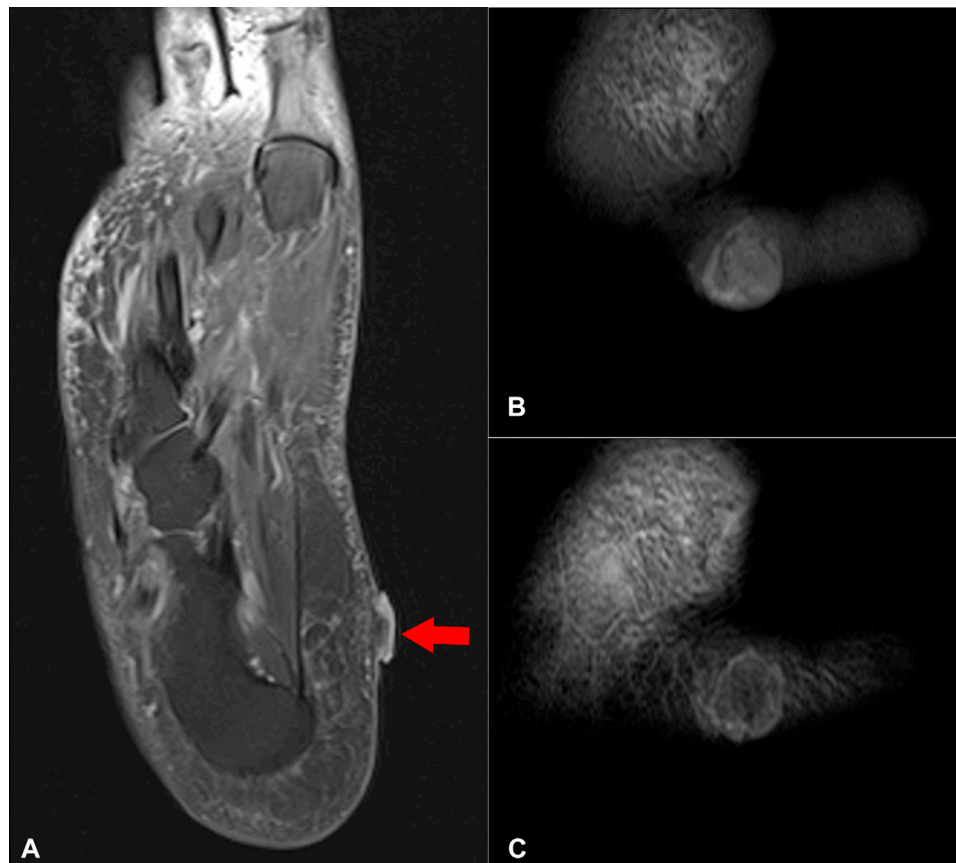


Fig 1. Acral lentiginous melanoma. **A**, Axial, T2-weighted, fat-suppression image shows a subcutaneous spindle-like mixed signal in the medial part of right heel (arrow), with high signal in the periphery and low signal in the central part. **B**, Sagittal T1-weighted image shows high signal in the lesion. **C**, sagittal T2-weighted image shows low signal in the lesion.

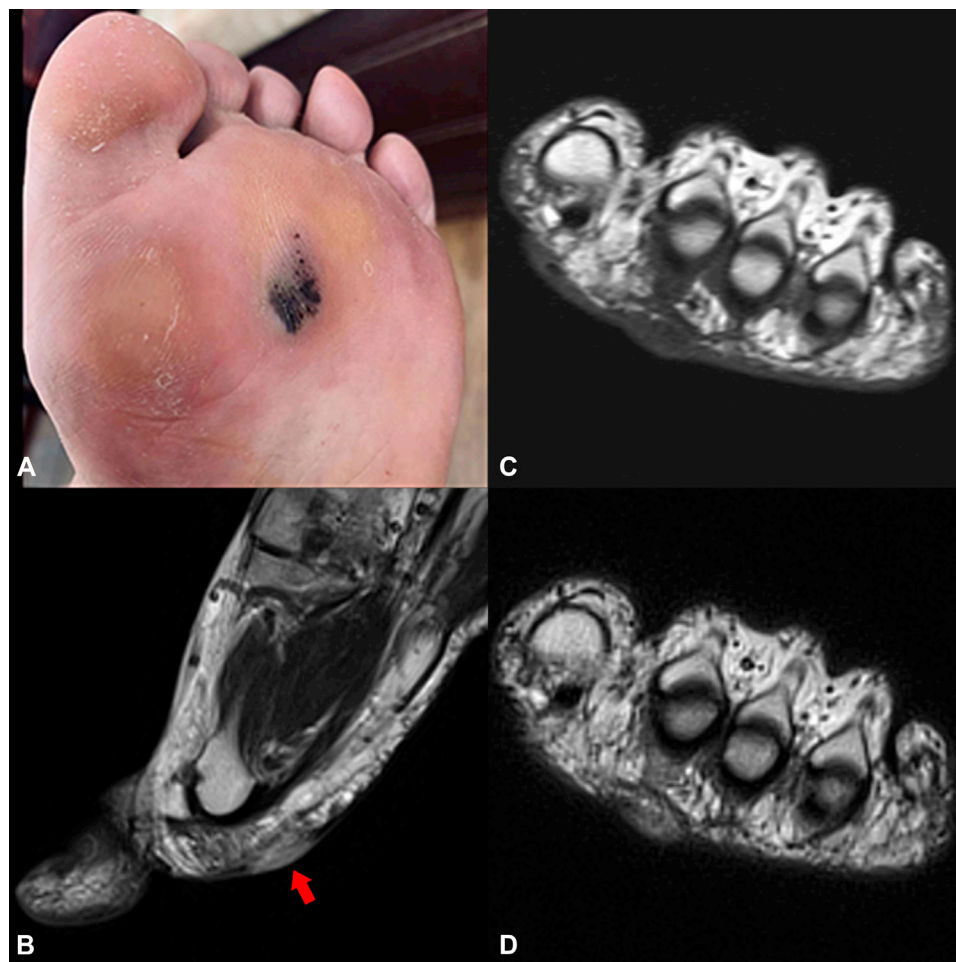


Fig 2. Hemangioma. **A**, Dermoscopic image shows a lesion on the sole with black surface. **B**, Sagittal T2-weighted image shows the lesion with high signal (arrow). **C**, Axial T1-weighted image shows low signal in the lesion. **D**, Axial T2-weighted image show high signal in the lesion.