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LETTER TO THE EDITOR

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Magnetic resonance imaging of tropical ulcers

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Sir,

With great interest, we read the recent publications about bone infections in European Radiology [1, 2], which were helpful in finding the correct diagnosis in the following unusual case.

A 66-year-old male immigrant from Somalia presented with a chronic ulcerous tibial skin infection. The ulcer was localized at the middle third of the anterior tibia and measured 3 cm in diameter. Magnetic resonance imaging (MRI) was performed to detect signs of osteomyelitis or tumor infiltration.

MRI demonstrated the ulcer as a hyperintense soft tissue lesion on T1- and T2-weighted turbo spin-echo (TSE) images. A thick hypointense rim underneath represented the sclerotic periosteum (Fig. 1a). Contrast-enhanced fat-suppressed T1-weighted TSE images revealed a marked enhancement of the ulcer tissue, but only a moderate enhancement of the bone marrow (Fig. 1b). The absent penumbra sign [1] and abscess cavity were not suggestive of chronic forms of post-traumatic osteomyelitis [2] (Fig. 1a). Irregular margins and invasion of bony structures as a hint of a soft tissue tumor were also missing.

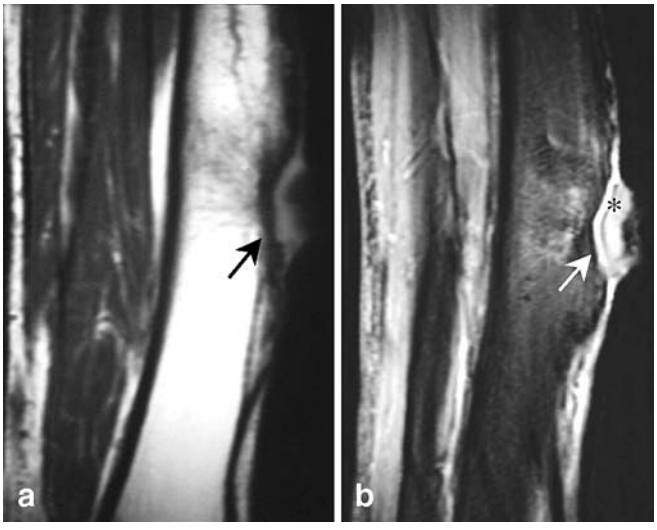

Fig. 1a, b Tropical ulcer in the lower leg of a 66-year-old-male. **a** Sagittal T1-weighted turbo spin-echo (TSE) image. The hypointense margin (*arrow*) underneath the moderately hyperintense ulcer tissue corresponds to sclerosis on radiography (not shown). No abscess cavity or penumbra sign is visible. **b** Sagittal contrast-enhanced fat-suppressed T1-weighted TSE image. There is a marked enhancement of the soft tissue within the ulcer (*asterisk*). Note the pronounced hyperintense ulcer ground (*arrow*). There is also a moderate enhancement within the spongy bone, but no signs of ulcer invasion into the bone

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From these clinical and imaging findings, we concluded a tropical ulcer in a typical location. The ulcer was completely excised and the defect closed with a skin flap that healed without any complications. Diagnosis was substantiated by microbiological proof of a mixed infection with species of *Enterococcus*, *Corynebacterium*, and *Prevotella*. Histologic analysis revealed chronic infection without signs of osteomyelitis or malignancy.

Tropical ulcers are necrotic skin infections seen in patients of all ages from tropical and subtropical regions [3]. These painful lesions result from an initial trauma. They can erode muscles, tendons, and, occasionally, the underlying bone, and mainly affect the middle third of the tibia [3]. Smear from the ulcer often reveals an infection of various microorganisms [3]. Radiographs may demonstrate cortical sclerosis and, in chronic cases, bone deformity. The imaging appearance with broad-based excrescences may resemble osteomas and is referred to as the "ivory ulcer osteoma." Chronic ulcers may undergo malignant transformation, leading to epidermoid carcinomas [3].

The MRI findings of tropical ulcers do not include the penumbra sign in contrast to low-grade osteomyelitis. Bone marrow edema and contrast-enhancement due to hyperemia and increased endothelial permeability are non-specific signs, and can be met both in osteomyelitis and in tropical ulcers.

Although tropical ulcers are a rare entity in the Western world, it is very common in tropical regions. Immigrants and tourists with tibial ulcers might be referred for diagnostic work-up to MRI, such as in our case. MRI might especially be helpful in the preoperative work-up of patients with tropical ulcers to evaluate the extent and involvement of surrounding tissue.

References

1. Davies AM, Grimer R (2004) The penumbra sign in subacute osteomyelitis. Eur Radiol 15: DOI: 10.1007/s00330-004-2435-9
2. Guermazi A, Mohr A, Genant HK (2003) Brodie abscess: another type of chronic posttraumatic osteomyelitis. Eur Radiol 13:1750–1752
3. Tropical Ulcers (2005) In: Tropical Medicine Central Resource (TMCR). International Registry of Tropical Imaging. Radiology Department of the Uniformed Services University, Bethesda, Maryland. Available at http://www.tmcr.usuhs.mil/tmcr/chapter36/intro.htm