Intraosseous venous drainage of pretibial varices
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Section: Musculoskeletal system
Area of Interest: Extremities Musculoskeletal system
Musculoskeletal bone
Procedure: Diagnostic procedure
Imaging Technique: Ultrasound-Colour Doppler
Imaging Technique: MR
Imaging Technique: MR-Angiography
Imaging Technique: Conventional radiography
Special Focus: Varices Case Type: Clinical Cases
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Patient: 84 years, male

Clinical History:
An 84-year-old man came to the emergency room with pain in the anterior aspect of his left tibia lasting for 1 week. The patient related that it worsened while walking and improved when resting. An erythematous skin rash was seen at the pretibial surface at physical examination. The patient was treated with corticosteroids without any improvement.

Imaging Findings:
An X-ray was performed showing a small lytic longitudinal lesion within the tibia. Considering the erythematous lesion, an ultrasound was done to rule out deep vein thrombosis (DVT). The ultrasound (US) was negative to DVT but the Doppler study revealed engorgement of pretibial veins and, quite unusually, some of these deep veins seemed to communicate with the bone. An MRI was performed a few days later, revealing an intraosseous venous drainage of pretibial varices.

Discussion:
The intraosseous communication of varices is an uncommon condition with less than 15 patients reported in the literature [1, 5]. Generally, patients are adults presenting with pain in the lower limb, most of them in the tibial diaphysis as it occurred in our report.

It is not fully understood why this condition occurs and its real clinical importance is not known. One author hypothesized that an auxiliary intraosseous path could be favoured in the setting of venous insufficiency due to DVP [1, 5]. That is why it is believed that these patients are prone to varices and DVP. Treatment usually consists of ambulatory phlebectomy, ligation and stripping, or percutaneous ablation [5].

If we do not recognize it and make an erroneous diagnosis, the treatment may differ and lead the patient to a surgery or to an excisional biopsy. Besides, the diagnosis of this condition is easily made by imaging alone. Colour Doppler ultrasound is very useful to evaluate the presence of dilated veins (Fig. 1) and even evaluate the surface of the bone showing a varix adjacent to it [1-3, 5].

Conventional X-ray may show a cortical defect representing an enlarged nutrient canal in the affected tibial diaphysis (Fig. 2).
As this is a benign process, no aggressive osseous patterns have been described and no masses are seen adjacent
to the bone other than the varices [1, 5]. This is in accordance with our case and other studies [3, 4, 5]. MRI is the technique of choice to confirm the diagnosis as it is not invasive, provides better contrast resolution and does not use ionizing radiation. MRI can also be used to exclude other conditions such as low or high flow vascular anomalies and vascular tumours. However, these entities have different imaging and clinical features [5]. Fluid sensitive sequences such as FSE T2 with fat saturation or STIR may be sufficient to demonstrate this anomaly (Fig. 3). Post-contrast images can also be obtained to rule out the presence of thrombus (Fig. 4).

In conclusion, we report a patient with pretibial varices with intraosseous venous drainage anomaly who finally underwent vascular ablation. Ultrasound is usually the first imaging modality to assess the lesion and may be sufficient to make the diagnosis. MRI is the technique of choice to confirm it and can be useful to rule out other vascular entities. It is important to recognize this unusual condition as treatment and management may vary.

**Differential Diagnosis List:** Intraosseous venous drainage of pretibial varices., Venous malformation, Haemangioma, Arteriovenous malformation (AVM)

**Final Diagnosis:** Intraosseous venous drainage of pretibial varices.

**References:**


Description: Colour-coded Doppler ultrasound shows dilated veins adjacent to the anterior aspect of the tibial cortex. Origin: Hospital Son LLátzer, Palma de Mallorca (Spain)
Figure 2

Description: Lateral view of the lower extremity showing a cortical bone defect (blue arrowhead) and a serpiginous lytic image in the medullary aspect of the tibia (red arrow). Origin: Hospital Son LLátzer (Palma de Mallorca) SPAIN
Description: Sagittal fat suppression FSE T1 after Gd injection showing an anomalous vessel going across the medullary cavity. Origin: Hospital Son LLátzer (Palma de Mallorca). SPAIN
**Description:** Axial short tau inversion recovery image of the lower extremity showing dilated pretibial veins and an anomalous intramedullary vessel. Note the cortex thinning in the anterior aspect of the tibia. **Origin:** Hospital Son Llátzer (Palma de Mallorca). SPAIN