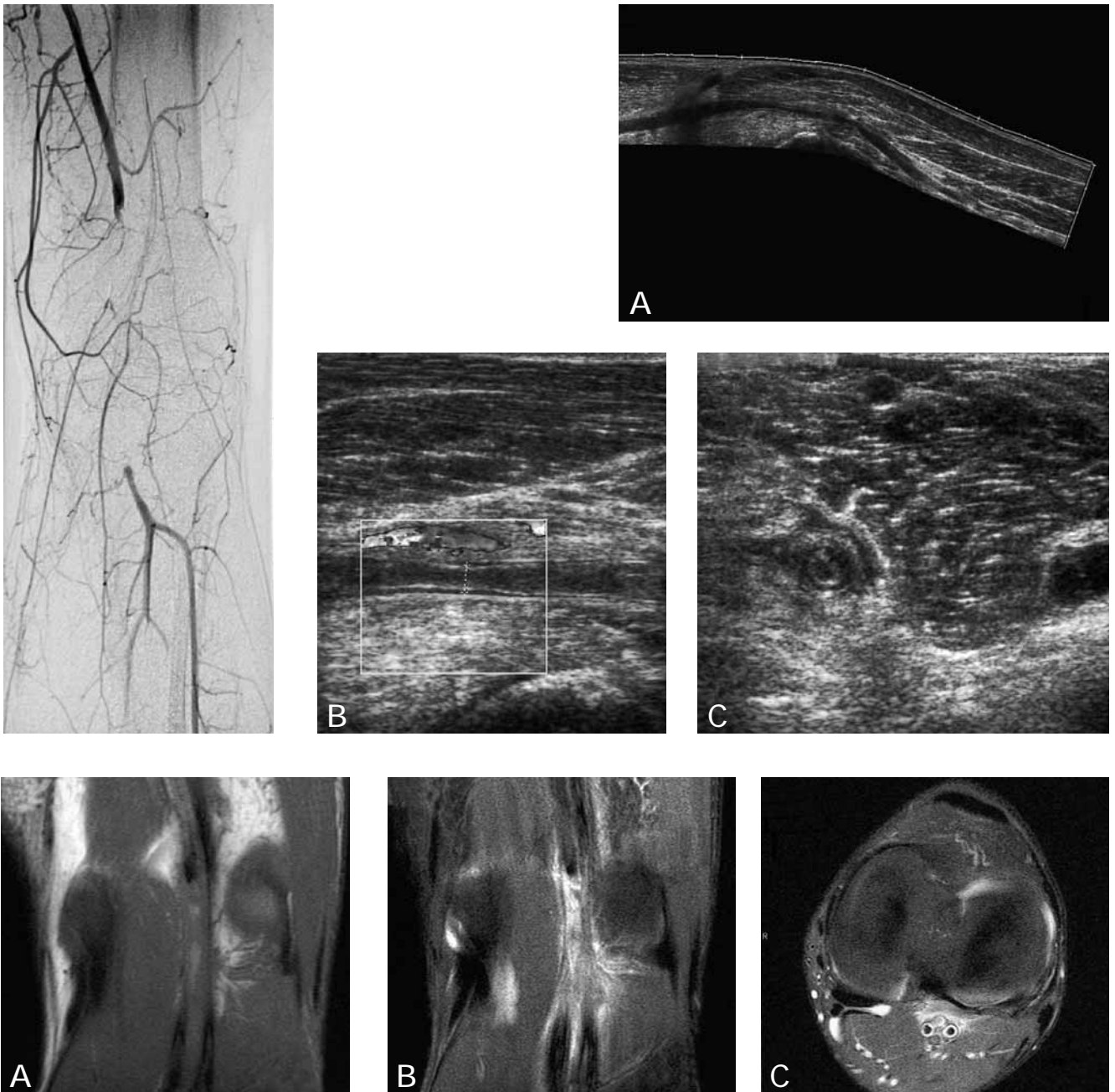


POPLITEAL ARTERY ENTRAPMENT SYNDROME

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Key-word: Arteries, extremities

Background: A 47-year-old athletic man without relevant medical history consulted the vascular surgeon because of claudication in his left leg after 50 meters walking. There was no history of trauma and the clinical examination revealed coldness of the left foot.



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Fig.

1	2A
2B	2C
3A	3B 3C

Work-up

Digital subtraction angiography of both lower legs (Fig. 1) shows occlusion of the left popliteal artery with refilling of the distal popliteal artery.

Ultrasound with power Doppler of the popliteal fossa (Fig. 2) shows on the panoramic view of the popliteal region (A) tapering of the popliteal artery with thickening of the endothelial wall and on longitudinal view with power Doppler box (B) and transverse view of the popliteal artery (C) absence of flow in the popliteal artery, thickening of the endothelial wall and hyporeflexive thrombus (arrows).

MRI of the knee (Fig. 3) demonstrates on the coronal SE T1 WI (A) an intermediate signal intensity at the lumen of the popliteal artery. And on the coronal (B) and axial (C) TSE T2 WI with fat suppression (FS) an intermediate to high signal intensity of the popliteal artery with thickening of the wall. Prolonged T2 time at the peri-arterial fatty tissue. Normal position of the popliteal artery in between the popliteal veins and the medial and lateral head of the gastrocnemius muscles is noted. No fibrous band is seen.

Radiological diagnosis

The patient underwent surgical exploration of the left popliteal fossa. The anatomical relationship between the popliteal artery and the medial head of the gastrocnemius muscle was normal, no external compression of the vessel was found.

The vessel showed a localized circular intimal hyperplasia and narrowed lumen with thrombosis.

This kind of popliteal lesion is observed in athletes developing intimal hyperplasia or endofibrosis due to (micro)trauma and kinking of the popliteal artery.

Discussion

The history and clinical examination of the patient suggest popliteal entrapment syndrome

(PES) which could not be confirmed by imaging methods and intraoperative findings. PES is recognized as one of the causes of lower limb ischemia in young male patients with muscle hypertrophy due to intense training (volleyball, basketball, judo, distance running). It results from an abnormal anatomical relationship between the popliteal artery and the medial head of the gastrocnemius muscle. This form represents the majority (+/-90%) of the PES cases. In other cases, the popliteal artery may also be compressed by a fibrous band crossing the artery from the medial head of the gastrocnemius muscle to the lateral femoral condyle. The intraoperative and imaging findings in our patient revealed no such anatomical abnormalities. Because of the intensive physical activities of the patient (skiing), a popliteal artery endofibrosis as a consequence of repetitive mechanical microtraumatic events of the popliteal region while entering the ski lift, was suspected. The movement of the chair, combined with jumping on it in motion, results in a microtrauma of the popliteal region and may damage the popliteal artery with development of intimal hyperplasia and subsequent stenosis and thrombosis. Endofibrosis of the external iliac artery is a similar and well known pathologic condition in cyclists. Endofibrosis of the popliteal artery in skiing is less well known.

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