Case 14716

Leiomyosarcoma of the greater saphenous vein
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Section: Musculoskeletal system
Area of Interest: Extremities Musculoskeletal system
Musculoskeletal soft tissue
Procedure: Diagnostic procedure
Procedure: Imaging sequences
Imaging Technique: Ultrasound
Imaging Technique: Ultrasound-Colour Doppler
Imaging Technique: MR
Imaging Technique: PET-CT
Special Focus: Epidemiology Neoplasia Tissue characterisation Case Type: Clinical Cases
Authors: Kåre Donskov Nielsen
Patient: 56 years, male

Clinical History:

56-year-old male patient presented with a growing subcutaneous tumour at his inner thigh on the right side. He experienced no pain. At the time of the ultrasound examination, it measured 5x5x8 cm. A pre-operative MRI scan was performed. It was diagnosed histologically as a leiomyosarcoma of the greater saphenous vein.

Imaging Findings:

Ultrasound showed an irregularly vascularised and echo-poor tumour in close contact with the greater saphenous vein.
MR showed a heterogeneous hypointense process on T1 sequence before contrast with inhomogeneous contrast enhancement. In TIRM sequence the process was inhomogeneous, predominantly hyperintense.
The tumour seems (partly) to grow endovascularly in the greater saphenous vein (Fig 3a-c).
Pre-operative Positron emission tomography–computed tomography (PET-CT) showed a PET positive tumour, but no sign of metastases.

Discussion:

Leiomyosarcoma (LMS) in general is a rare type of malignant tumour of smooth muscle tissue, accounting for only 6 % of all soft tissue malignant tumours [1]. Only 2 % of LMS originate from major vessels and most occur in the inferior vena cava [1, 2, 3]. A review from 2016 concluded that only ~1/1.000.000 malignant tumours is LMS of the greater saphenous vein (GSV). The same review stated that only 38 cases has been reported in the literature [1].

The clinical presentation of LMS of the GSV is typically a growing mass. It can be painless, give pain on movement, or present with symptoms such as oedema and venous thrombosis. The mean age in the literature is 55-61 years [1]. The tumour arises intramurally from the tunica media of the vein. The tumour tends to develop in extra-vascular direction, but also, tends to develop intraluminal in GSV, as in this case.

Ultrasound is the primary examination of soft tissue tumours, MR comes second because it provides superior soft-
tissue contrast resolution. The role of PET-CT is to determine whether the lesion is malignant and whether there are metastases. A combination of local MR, to rule out local relapse, and CT thorax and abdomen is used for follow-up.

The treatment is surgery, resection with a wide margin of 2-3 cm. There are no studies regarding adjuvant radiation and chemotherapy. At the time of diagnosis, 10 % of patients with LMS of the GSV have metastasis. The main site of metastatic disease is the lungs. Survival rate of 80-90 % after surgery is reported [1]. The patient in this case showed no sign of local relapse (MR) or metastasis on CT scan 6 month after surgery.

**Differential Diagnosis List:** Leiomyosarcoma of greater saphenous vein., Epithelioid haemangioendothelioma, Angiosarcoma

**Final Diagnosis:** Leiomyosarcoma of greater saphenous vein.

**References:**


Description: Ultrasound of LMS of the greater saphenous vein. The tumour is heterogeneous and irregularly vascularised (Doppler signal to the upper right corner). The Doppler signal in the upper left corner is the vein. Origin: Dep. of Radiology, Holbaek Hospital, Denmark
Description: MR (T1 pre-contrast):
The subcutaneous tumour is hypointense with almost the same intensity as muscle tissue. Note that the tumour is not invasive to the surrounding fat and muscle tissue. Origin: Dep. of Radiology, Holbaek Hospital, Denmark
Description: MRI (T1 fs after gadolinium administration):
The tumour is now seen with heterogeneous enhancement. Origin: Dep. of Radiology, Holbaek Hospital, Denmark
Description: MR (TIRM): On this sequence the tumour is heterogeneous and hyperintense. Origin:
Dep. of Radiology, Holbaek Hospital, Denmark
Description: PET-CT: The tumour is PET positive and localised, as shown in the image. Origin: Dep. of Radiology, Holbaek Hospital, Denmark
Description: MR (T1 after gadolinium administration):
The image shows the heterogeneous hyperintense tumour in subcutis. Caudally the tumour seems to grow intraluminally in the vein. **Origin:** Dep. of Radiology, Holbaek Hospital, Denmark
Description: MR (T1 after gadolinium administration) Origin: Dep. of Radiology, Holbaek Hospital, Denmark
Description: MR (T1 after gadolinium administration):
Cranially, the vein continues its course away from tumour. Origin: Dep. of Radiology, Holbaek Hospital, Denmark