CASE REPORT

Common femoral vein canal lipoma causing chronic unilateral lower limb swelling

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Accepted 27 March 2014

SUMMARY

A 64-year-old woman presented to vascular clinic with a 2-year history of right ankle swelling, associated with pain on walking. Initial venous duplex imaging showed no obvious cause. Further imaging showed a lipoma compressing the common femoral vein. We consider the relative merits of the imaging modalities of the groin and the literature available on lipomas causing compression.

BACKGROUND

A common cause of lower limb swelling is chronic venous insufficiency. This can manifest as varicose veins and in some patients leg ulcers with prevalence of 0.1–68% depending on the definition used.¹ Chronic venous stasis and hypertension leads to trophic skin changes and ulceration. Lower extremity ulceration is associated with significant morbidity and a major socioeconomic burden, making it an important condition to manage.² Venous disorders accounted for more than 150 000 hospital admissions in England during 2012–2013.³

The mainstay investigation for initially diagnosing the cause of lower limb swelling is a venous duplex scan. In cases in which no cause is demonstrated by ultrasound, cross-sectional imaging may be indicated. The case being presented is of a patient with an unusual cause of secondary lower limb swelling leading to chronic venous insufficiency that was not initially diagnosed with a venous duplex scan.

CASE PRESENTATION

A 64-year-old fit and healthy woman presented to vascular clinic with a 2-year history of right ankle swelling, associated with pain on walking. The pain was described as an aching pain that was especially worse at the end of the day (consistent with symptoms of chronic venous insufficiency).

On examination, the patient's right ankle was significantly more swollen than the left. There were no skin changes or visible varicose veins, pulses were all present and she had a normal ankle brachial pressure index (1.07).

INVESTIGATIONS

The duplex ultrasound scan performed in clinic showed no evidence of superficial or deep venous reflux but suggested the possibility of enlarged lymph nodes in the right groin. CT of the abdomen and pelvis demonstrated a mass, possibly a lipoma, compressing the common femoral vein (CFV) in

Figure 1 CT of femoral canal. Lipoma sitting medial-to-common femoral artery. Arrow on lipoma.

the right femoral canal ([figure 1](#)). This mass was further characterised using ultrasound and MRI which confirmed a well-defined lipomatous lesion measuring 4.6×2.5×1.5 cm in the right femoral canal facing the CFV ([figure 2](#)). In light of the above investigation, a further venous duplex scan was undertaken which showed compression of the CFV.

DIFFERENTIAL DIAGNOSIS

Causes of a swollen leg can be local or systemic. Systemic causes, which generally cause bilateral lower limb swelling, are congestive cardiac failure, renal failure, hypoalbuminaemia and protein losing nephropathy. Other causes which can manifest as both unilateral and bilateral lower limb swelling are lymphoedema (primary and secondary), lipoedema, deep vein thrombosis (DVT), cellulitis, Bakers cyst, venous insufficiency, postoperative complications, malignancy, infection, trauma and idiopathic. Rare causes include neurofibromatosis, haemihypertrophy and macrodystrophia lipomatosa.^{4 5}

The common causes of unilateral lower limb swelling are chronic venous insufficiency secondary to varicose veins or DVT^{6 7} and lymphoedema the most common cause of which, in the developed world, is malignancy.⁴

TREATMENT

The procedure was performed through a transverse incision. A 5 cm lesion was found to overlay the CFV and artery with adherence to the adventitia of the artery ([figure 3](#)). The CFV was compressed by the lesion. While the mass itself had the consistency of a normal lipoma, the tissue in the area was thickened with some prominent lymph nodes and vessels. The mass was dissected from the vessels

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To cite: Lowry D, Kay MD, Tiwari A. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-201968

Figure 2 MRI showing sagittal view of lipoma compressing common femoral vein (CFV). Solid arrow, lipoma; dashed arrow, CFV.

and surrounding area and both the mass and an overlying lymph node were sent for histology. The patient was discharged after 24 h following an uneventful recovery.

OUTCOME AND FOLLOW-UP

Histology demonstrated a 4.4×3.8×1.6 cm encapsulated fatty lump consisting of uniform adipocytes with patchy strands of fibrous tissue consistent with a benign lipoma. The lymph node showed non-specific proteinaceous lymphadenopathy with no evidence of lymphoma.

On review in clinic 6 weeks following the procedure, the patient reported that she no longer had any pain on walking or aching at the end of a day. Examination showed that the swelling had completely resolved and a repeat duplex scan confirmed that there was no longer any compression of the femoral vein.

DISCUSSION

Lipomas are benign soft tissue tumours composed of mature adipocytes. They are often contained by a capsule and may contain fibrous septa. They are most commonly found subcutaneously and are removed to rule out malignancy, patient comfort or for cosmetic reasons. Depending on the position and size of the lipoma they can cause compression of adjacent structures, such as compression of the superior vena cava.⁸

In this literature review we found only three case reports describing CFV compression secondary to a lipoma. Brady and

Spence⁹ presented a case of a 43-year-old woman with a history of chronic DVT for which no obvious cause was identified until MR venography showed a severely stenotic CFV caused by a well-defined mass, later confirmed as a lipoma, lying posterior to the CFV. Prior to this investigation, pelvic ultrasound and CT of chest and abdomen and other investigations to rule out malignancy had failed to provide a diagnosis. In Gasparis *et al*'s case,¹⁰ the patient had previously been misdiagnosed as having DVT due to the mass having an echolucent appearance similar to acute thrombus on duplex scan. The diagnosis was eventually made on CT venogram that showed a lesion with cystic characteristics anterior to the CFV causing venous outflow obstruction. Day and Thomas¹¹ presented a similar case of a 47-year-old man with a one-year history of unilateral leg swelling with associated skin changes. The only abnormality detected on duplex scan was loss of the normal variation of venous flow with ventilation when the patient was supine. The CT scan showed compression of the CFV by a lipoma lying anterior to the vein in the femoral sheath. In all these cases, surgical resection took place and the patient's symptoms improved.

Duplex scan failed to make the diagnosis in all four cases including our own.^{9–11} In this case, the lipoma was misidentified as lymphadenopathy. No venous compression was visualised in any of the cases with only one case report commenting on the loss of variation in venous flow on respiration.¹⁰

The causes of venous insufficiency can be divided into primary and secondary; primary accounting for abnormalities of the venous wall and valves, and secondary including changes after DVT and obstruction.⁶

Duplex ultrasound is the recommended first-line investigation for unilateral limb swelling as it is quick to perform, avoids radiation exposure and is effective for assessing the most common causes of with limb swelling such as venous obstruction or incompetence.^{6 7 12} If no obvious cause for the swelling is found with the duplex it is possible to perform a plain ultrasound of the groin, or other area of clinical suspicion, during the same appointment.

However, ultrasound has been demonstrated to have poor sensitivity for soft tissue lesions (sensitivity 52%, specificity 86%).¹³ There is little evidence concerning the identification of deep lipomas in the groin and in particular differentiation of lipomas from lymph nodes.

Both CT and MRI have been shown to be able to differentiate between types of soft tissue tumours in other areas of the body^{14–16} and both are commonly used in the staging of perineal and pelvic tumours. CT cannot reliably differentiate between soft tissue lesions, such as cord lipomas and hernias composed of preperitoneal fat,¹⁷ suggesting that it may not be the ideal imaging modality for the inguinal region. This is

Figure 3 Intraoperative view of lipoma. Solid arrow; lipoma; dashed arrow; common femoral vein.

Learning points

- ▶ Duplex ultrasound remains the first-line investigation to safely and effectively diagnose the common causes of lower limb swelling.
- ▶ In the presence of a normal duplex scan, the decision to proceed to either MRI or CT should be based on clinical suspicion of the patients' symptoms and clinical signs.
- ▶ Lipomas in the common femoral vein canal should remain a differential for any patient presenting with compressive symptoms.

similar to our case in which the mass was still, on the initial report, described as lymphadenopathy. MRI is known to provide images with good soft tissue contrast that allow the structures of the inguinal region to be clearly identified¹⁸; however, as of today the accuracy of identification of soft tissue masses have not been looked into, specifically.¹⁷

Contributors DL and MDK wrote the paper. AT reviewed and edited the paper.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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