Popliteal masses masquerading as popliteal cysts

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SUMMARY Two popliteal swellings, thought initially to be synovial cysts associated with arthritic knees, were found to be unrelated tumours of serious significance. In the presence of neurological signs or a large cyst in association with a noninflamed knee joint a disease other than a simple synovial cyst should be considered.

A mass in the popliteal fossa may arise from a variety of different causes including synovial cysts, thrombophlebitis, popliteal artery or vein aneurysms, gastrocnemius haematomas, and neoplastic tumours. Of these the lesion most commonly associated with arthritis in the knee is a popliteal synovial cyst, or Baker's cyst. In certain circumstances a high index of suspicion should be maintained that despite the presence of arthritis a popliteal mass may not be a synovial cyst.

Two cases are reported in which the initial diagnosis was of a synovial cyst, but at subsequent surgery uncommon neoplasms were found to have caused their symptoms.

Case reports

CASE 1

A 50-year-old woman with a history of 5 years of seropositive erosive rheumatoid arthritis presented with a mildly painful diffuse swelling in the left popliteal fossa. There was no calf swelling. Over the ensuing 5 months the popliteal mass persisted and the calf became severely painful, with signs of muscle wasting and foot drop. A nerve conduction study showed loss of impulse conduction at or below the knee.

The appearance of neurological signs precipitated surgical intervention. At operation, however, a hard mass was revealed, integrally involving the sciatic nerve. A biopsy was taken and the tumour was later excised. The mass was solid, measuring 6 cm in diameter $\times$ 24 cm in length, and was well encapsulated (Fig. 1). Histology confirmed the diagnosis of a neural sheath fibrosarcoma with incomplete removal of tumour at the proximal cut end.

The patient received postoperative irradiation to

the left leg followed by cytotoxic chemotherapy. For the last 18 months she has had no antimitotic treatment, and apart from her persisting rheumatoid arthritis she remains well. She walks with the aid of a foot-drop splint.

CASE 2

A 69-year-old woman presented with a history of 12 months of progressive, painless swelling of the right calf and popliteal fossa. Over the preceding 4 years she had noted mild pain in both knees but had suffered no other joint symptoms. Examination revealed a small right knee effusion and a large swelling of the right calf extending from the popliteal fossa. It was not attached to adjacent muscle. Blood tests showed a haemoglobin of 12.9 g/dl, a total leucocyte count of 7.2×10^9 cells/l, an ESR of 15 mm in the first hour, a positive latex test, and a Rose-Waaler titre of 1:64. A plain radiograph of the right leg showed mild degenerative changes in the knee, and a large soft-tissue mass at the back of the knee and leg. Arthrography demonstrated free communication of the

Fig. 1 Excised sciatic nerve from case 1, showing neural sheath fibrosarcoma.

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Fig. 2 Amputation specimen of case 2, incised from behind to show loculated, partly cystic tumour in gastrocnemius muscle.

knee joint with a large cyst extending down to mild calf level.

The cyst progressively enlarged, so that surgical excision became necessary when by its bulk it interfered with walking. At operation a massive multiloculated cyst was incompletely excised. It was semisolid and appeared to arise from the back of the knee joint (Fig. 2). Histology of the specimen revealed it to be a spindle-cell liposarcoma, so an above-knee amputation was performed. She gradually deteriorated with recurrent ascites and abdominal masses, and died 6 months after operation. A post-mortem was not performed.

Discussion

Synovial cysts may produce symptoms by compression or dissection of adjacent structures, or by rup-

ture and leakage of synovial fluid. The 2 cases reported here were considered to have synovial cysts causing compressive symptoms.

Neuropathies of the sciatic nerve following hip surgery or trauma, or intramuscular injection, and of the common peroneal nerve resulting from bony deformity or local trauma in the region of the head of the fibula, are well recognised. Especially in rheumatoid patients the physician must also be aware of noncompressive neuropathies from vasculitis, amyloidosis, and other metabolic abnormalities. Intraneural ganglia may cause neuropathies^{1 2} of the common peroneal and rarely of the tibial nerve, but not all connect with synovial joints, nor are they often seen in rheumatoid patients. They are thus unlikely to be confused with popliteal cysts. We are aware of only one report³ in which popliteal cysts were shown to cause entrapment neuropathies. In 3 of these cases the common peroneal nerve was involved, in another the tibial nerve, and in a fifth case both nerves were compressed.

Entrapment neuropathies caused by expanding popliteal cysts appear to be uncommon. However, popliteal cysts occur in up to 30% of patients with chronic rheumatoid involvement of the knees.⁴ We therefore deduce that popliteal cysts rarely cause entrapment neuropathies. A trial of intra-articular steroid may be worthwhile,³ but early surgery is recommended if there is no response. In case 1 the neurological signs were so profound that intra-articular steroid was thought to be inappropriate.

Popliteal cysts are usually small in the absence of inflammatory arthritis. A large cyst, of the size that occurred in case 2, is usually seen in patients with rheumatoid arthritis involving the knees.^{5 6} Apart from a weekly positive rheumatoid factor there was no evidence of rheumatoid arthritis in case 2. We would recommend that a large popliteal cyst in association with a noninflamed knee joint warrants investigation by arthrography. This would usually be adequate to demonstrate whether or not the mass is a synovial cyst. However, arthrography may be misleading, as in case 2. Although both synovium and liposarcomas⁷ are thought to be of connective tissue origin, it is unlikely that the liposarcoma arose from the knee joint synovium. A more probable explanation is that the liposarcoma simply eroded into the back of the knee joint, thus producing a patent communication between the 2 structures.

Synovial cysts are a not uncommon association with internal derangement of the knee joint. We would recommend that in the presence of neurological signs, or if the cyst is extremely large in the absence of rheumatoid arthritis, the clinician should be alerted to the possibility that other pathology may be involved.

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