

Sonography of popliteal masses

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Sonography of the popliteal space was performed in 28 patients with a history of a popliteal mass, verified by physical examination in all but 7 patients. The final diagnosis was established by needle biopsy or surgery. Three main types of lesions were found sonographically. A thin-walled echo-free cyst was present in 16 patients. The diagnosis in all of these cases was Baker's cyst. Two patients had a mixed cystic and solid lesion, which was found to be a Baker's cyst, with a loose body in 1 case and a soft-tissue sarcoma with hematoma in the other. Three patients showed solid lesions subsequently diagnosed as an old rupture of the semimembranosus muscle, lipoma, and soft tissue sarcoma. Sonography was normal in the 7 patients without clinical evidence of a popliteal mass.

Sonography of popliteal masses is useful to distinguish benign cysts from other lesions.

We have studied the diagnostic value of sonography of popliteal masses.

Patients and methods

Twenty-eight patients, 24 adults and 4 children (20 males and 8 females), with a history of a unilateral popliteal mass were examined physically and with sonography. The median age was 40 (10-83) years. Nine patients had associated knee disorders, and no one had rheumatoid arthritis. Twenty-one of the 28 patients had a palpable mass in the popliteal space. Sonography was performed with a real time sector scanner (5 or 7.5 MHz) using gel as a couplant and with film documentation. Needle biopsy or surgery was performed in all the patients when the sonographic examination disclosed a popliteal mass.

Results

All the patients with a palpable mass showed sonographically a lesion in the popliteal space.

The 7 patients without a palpable popliteal mass at our examination were sonographically normal.

In 16 patients, sonography disclosed an echo-free cystic lesion with thin well-defined walls, sometimes with a central septum or septa; this group included the 4 children; the diagnosis was a benign Baker's cyst (Figure 1). A mixed cystic and solid nature of the lesion was revealed in 2 patients, and the subsequent diagnoses were Baker's cyst with a loose body (Figure 2) and soft-tissue sarcoma with a hematoma (Figure 3). Solid lesions were present in 3 patients, and they were diagnosed as a lipoma (Figure 4), old rupture of the semimembranous muscle, and a soft-tissue sarcoma of myxoid type, respectively (Figure 5).

Discussion

Baker's cyst is the most common popliteal mass, often associated with several kinds of knee disorders (Bauman and Kremer 1977, Gompels and Darlington 1982, Huskisson et al. 1979). Popliteal mass may also be due to proliferation of adipose tissue, popliteal artery aneurysm, thrombotic vein, or tumor (Herman et al. 1981). These lesions are more rare and may easily be misinterpreted as cysts. Malignant tumors in the popliteal space have often been treated inadequately because

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Figure 1



Figure 2

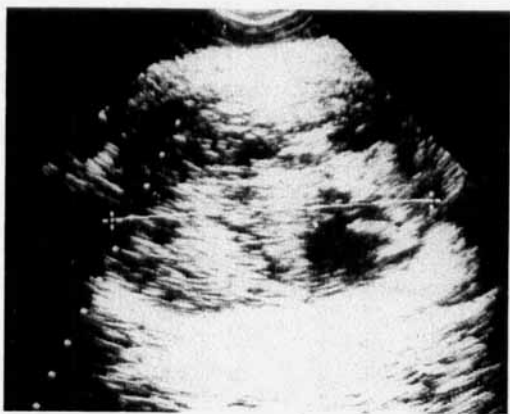


Figure 3



Figure 4

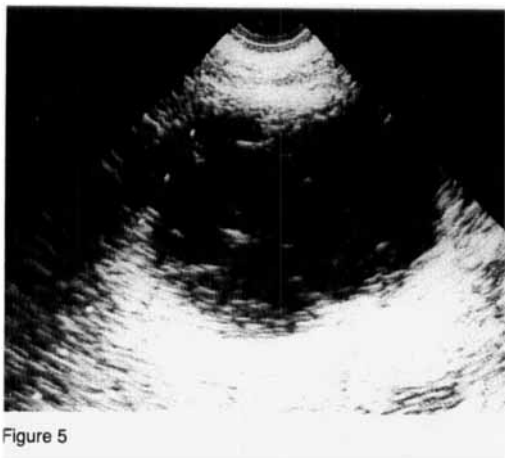


Figure 5

Figure 5

Figure 1. Transverse section through the knee with the transducer in the popliteal space (top of the figure). The line indicates a typical Baker's cyst with a sharp well-defined wall. The internal echoes in the cyst are artefacts. The echo-enhancement anterior to the lesion (bottom of the figure) is characteristic of a cyst.

Figure 2. Baker's cyst with a loose body.

Figure 3. Soft-tissue sarcoma with hematoma. Note the mixed internal echo pattern with strong and weak echoes suggesting a heterogeneous mass.

Figure 4. Lipoma. A homogeneous mass with no echo-enhancement anterior to the lesion.

Figure 5. Soft tissue sarcoma of myxoid type. Note the echo-enhancement anterior to the mass, indicating a cystic lesion. However, there are internal echoes in the mass, indicating the true nature of the lesion.

they simulate popliteal cysts clinically and arthrographically (Bogumil et al. 1981). In comparison with arthrography, sonographic evidence of a popliteal mass is more significant because arthrography may show an overdistended gastrocn-

mio-semimembranous bursa without clinical significance (Herman et al. 1981). Further, sonography, unlike arthrography, does not depend on persistent communication between joint space and cyst (Gompels and Darlington 1982).

Thin-walled cystic lesions seem always to be benign cysts and do not need any further investigations. As a noninvasive diagnostic tool, sonography is especially valuable in children where a popliteal cyst is usually a self-limiting process requiring no further therapy (Sharrard 1978). Lesions that in sonography are mixed cystic and solid should always be suspected to be malignant. Needle biopsy can be performed directly under sonographic control, which ensures a correct position of the needle in the solid part of the

lesion. Arthrography of these lesions may falsely demonstrate a simple cyst and delay treatment (Bogumil et al. 1981).

Solid lesions in the popliteal space should be suspected as being malignant tumors (Bogumil et al. 1981). A solid lesion is usually easily demonstrated by sonography. One of our solid tumors was a malignant fibrous histiocytoma of myxoid type that gave a relatively weak echo mimicking a benign cyst. It was distinguished from a benign cyst by the weak internal echoes.

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