Ganglion Cyst Within the Quadriceps Muscle: Evaluation With Computed Tomography and Ultrasound
A Case Report

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Introduction

Cysts in the region of the knee are common conditions for which computed tomography (CT) and sonography (US) are important in establishing the diagnosis.1-7 We describe a cyst within the quadriceps muscle and describe the CT and sonographic findings. Although most cysts about the knee are classified as synovial cysts, the one described here is a ganglion cyst because it was not synovial-lined and, based on its anatomic location, almost certainly did not arise from a synovial structure.

Case Report

A 30-year-old asymptomatic male discovered a small mass above his knee. There was no specific history of trauma, but he did participate in football and jogged occasionally. Palpation revealed a deep, firm, nonfixed and nontender 3 cm mass superolateral to the right knee.

Both AP and lateral radiographs of the knee and thigh were normal. Both CT and US have been shown to be reliable in evaluating extremity soft-tissue lesions. US is especially useful for small lesions not resolvable on CT and in differentiating cystic from solid lesions. CT is limited in detection of isodense lesions, which are not infrequent. CT, however, provides more information about anatomical relationships including adjacent bony and vascular structures.3-8 In this case the CT scan revealed a discrete 2 cm by 2 cm by 6 cm lesion of fluid density within the vastus lateralis muscle without evidence of communication with the knee joint. It extended as low as the upper margin of the suprapatellar bursa but remained within the muscle. US confirmed the cystic nature of the lesion and further demonstrated distal tapering evident on CT.

Percutaneous aspiration was performed to exclude a loculated hematoma. Instead, 3 ml of gelatinous amber fluid was obtained so a percutaneous biopsy was done yielding only skeletal muscle. Cytology was negative. Blood chemistries were normal including C-reactive protein and rheumatoid latex test to exclude an underlying inflammatory process which might predispose one to a synovial cyst.

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Because of the uncertain nature of the lesion, open excision was performed with wide margins. A pedunculated stalk without a demonstrable lumen was found extending from the cyst toward the quadriceps tendon. Pathology revealed a 2 cm cyst containing yellow mucoid fluid within a wall 0.1 cm thick with no synovial lining. The final diagnosis was ganglion cyst involving skeletal muscle.

Discussion

There are two general types of juxta-articular cysts. "Synovial cyst" is a generic term for cysts which occur within the region of a joint, whether or not they are lined by synovium or communicate with the articulation. "Ganglion cyst" is the term more frequently applied to cysts involving the wrists and feet.3,9 Although several hypotheses explaining the etiology of ganglion cysts have been proposed, it has been argued that they do not arise from existing synovial structures.9 Most cysts of the knee, such as popliteal cysts, are believed to arise from synovial structures and frequently are associated with inflammatory arthritis or trauma.1,2,5,6

Cysts which extend above the knee are uncommon and most are deep to the muscles.1,2 To our knowledge there have been no previous reports of a cyst within the quadriceps muscle. This cyst's intramuscular location makes it unlikely that it arose from nearby synovial structures. Other factors, specifically the absence of a synovial lining histology and predisposing factors such as arthritis and/or injury argue against its classification as a synovial cyst. The intramuscular location and its histology favor the diagnosis of ganglion cyst.

The differentiation between ganglion and synovial cysts is clinically significant in evaluating cysts in unusual locations. When CT and sonography are more extensively used to evaluate masses in the extremities, additional examples of such ganglion cysts in unusual locations are likely to be found. CT and US provided excellent presurgical characterization of this cyst in the quadriceps muscle.

References