Rheumatology Quiz

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A 34-year-old woman presented with a bruise around the right medial malleolus (Figure 1). She felt mild pain and swelling in her knee for the past ten days and noticed the bruise two days ago.

Figure 1

Questions:

1. What is her clinical sign?
2. What is her diagnosis?

Answers

1. The "Crescent sign."
2. Ruptured Baker's cyst.

Short Review

A 34-year-old woman with no known underlying diseases presented with a bruise around the right medial malleolus. Over the past ten days, she had experienced mild pain and swelling in her right knee, without any history of previous trauma. She had no prior history of arthritis, recurrent oral or genital ulcers, rashes, tendinitis, or any current medication use.

On physical examination, the patient exhibited a spontaneous bulge sign in her right knee, fullness in the right popliteal fossa, and a bruise proximal to the right medial malleolus (Figure 1; crescent sign). No ecchymosis was observed on other parts of the body or extremities. Blood tests revealed normal coagulation, complete blood count (CBC), alanine aminotransferase (ALT), creatinine, and erythrocyte sedimentation rate (ESR) of 3 mm/hour.

Ultrasound imaging identified hypoechoic fluid in the suprapatellar recess and a ruptured Baker cyst (Figure 2). Aspiration of the knee joint fluid revealed 2 mL of unclotted blood. Synovial fluid examination results indicated a red blood cell count of 4.176 million per mm^3, white blood cell count of 2,000 per mm^3, polymorphonuclear cell count of 26%, mononuclear cell count of 74%, and no crystals. Joint fluid culture yielded negative results. Subsequently, the patient reported significant improvement in her symptoms after xreceiving conservative care for one month.

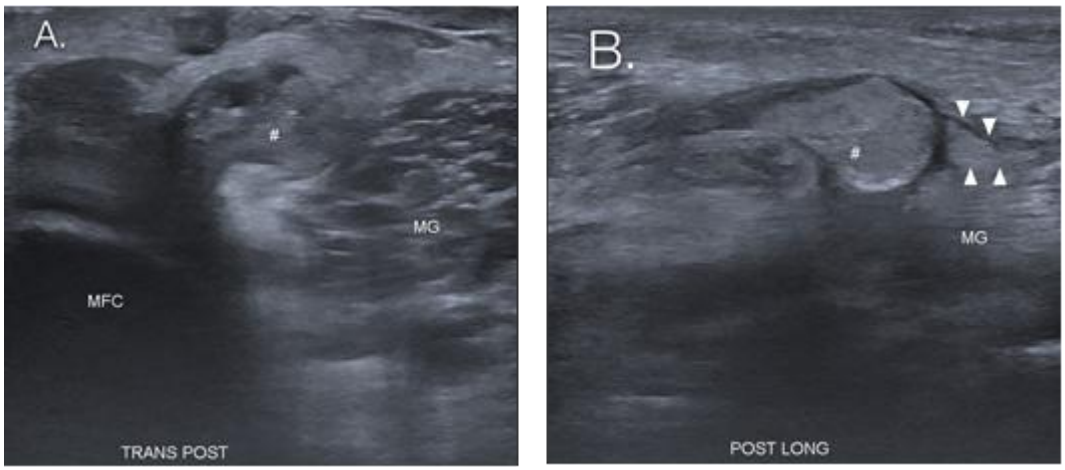

Figure 2 (A.) Transverse scan of posterior knee shows Baker's cyst with heterogenous echogenic fluid (#); (B.) Longitudinal scan of posterior knee shows Baker's cyst with pointed appearance at distal end (arrowhead), indicative of recent leakage. MFC, medial femoral condyle; MG, medial gastrocnemius

Bruising around the medial or lateral malleolus, indicating hemorrhagic fluid in the calf gravitating toward the ankle, is a finding suggestive of a ruptured Baker's cyst and is known as the crescent sign[1-3]. This finding aids in distinguishing it from acute thrombophlebitis (superficial thrombophlebitis and deep vein thrombosis). The first report naming the "crescent sign" was by Tibbutt and Gunning in 1974 described it in four patients with intramuscular hemorrhage of the calf. One of their cases potentially involved a ruptured Baker's cyst and did not exhibit the "crescent sign" until after anticoagulation had begun[4]. In 1976, Kraag G et al. reported two patients with underlying rheumatoid

arthritis who presented with clinical symptoms of ruptured Baker's cyst and displayed the "hemorrhagic crescent sign"[1]. The "crescent sign" is the sole clinical sign differentiating a ruptured Baker's cyst from deep vein thrombosis (DVT). In suspected DVT cases, the well-known Homan's sign is considered insensitive and nonspecific for DVT[5,6]. Both cases reported by Kraag G et al. were also positive for Homan's sign[1]. Differential diagnoses for a positive Homan's sign include ruptured Baker's cyst, intervertebral disc herniation, gastrocnemius spasm, and cellulitis. The presence of the "crescent sign" significantly reduces the likelihood of DVT. Certainly, patients may have ruptured Baker's cyst without the "crescent sign." Its presence may only be observed in cases of hemorrhage within Baker's cysts.

Baker's cyst is characterized by an enlargement of the medial gastrocnemius-semimembranosus bursa in the medial aspect of the popliteal fossa. This condition can remain asymptomatic until it ruptures, causing calf swelling and pain, closely resemble acute thrombophlebitis[7]. Consequently, a ruptured Baker's cyst is also termed pseudothrombophlebitis[8]. It is crucial to differentiate between a ruptured Baker's cyst and DVT, as anticoagulation treatment for a ruptured Baker's cyst may result in bleeding and subsequent compartment syndrome[9]. However, they are often difficult to distinguish solely through physical examination. Even rare but concurrent occurrences of ruptured Baker's cyst with DVT have been reported[10]. Ultrasound can be a useful tool for differentiation in suspected clinical circumstances.

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