MAEDICA – a Journal of Clinical Medicine
2022; 17(4): 999-1001
https://doi.org/10.26574/maedica.2022.17.4.999

MÆDICA - a Journal of Clinical Medicine

CASE REPORT

Extraarticular Synovial Osteochondromatosis in Baker's Cysts Bilaterally: a Rare Presentation

Poojitha SANKEPALLY[a], Heena Mehdi KHATOON[a], Annapurna SRIRAMBHATLA[a], Abhishek J. ARORA[a]

[a]Department of Radiodiagnosis, All India Institute of Medical Sciences (AIIMS), Bibinagar, Hyderabad, India

ABSTRACT

Synovial osteochondromatosis is a rare benign pathology arising from the synovial membrane of the joints, synovial sheaths or uncommonly the bursae around the joints. Baker's cysts are fluid filled, synovium-lined lesions arising in popliteal fossa. Synovial chondromatosis involving the Baker`s cyst is extremely rare. The aim of this case report is to document this exceedingly rare extra articular synovial pathology involving Baker's cysts of bilateral knees and to emphasize the importance of radiographs and sonography in the diagnosis.

Keywords: synovial osteochondromatosis, Baker's cyst, popliteal fossa, knee, radiograph, ultrasonography.

INTRODUCTION

Synovial osteochondromatosis represents a rare benign neoplastic process, which is caused by metaplasia of the synovium into chondrocytes (1, 2). In rare cases, it may involve extra-articular sites like tendons or bursae with an incidence of 1:1,00,000 in bursae around the knee joint (2). Only few case reports on synovial osteochondromatosis involving the bursa around the joints have been described. Many studies have shown that bursal chondromatosis mostly affected adults above 20 years of age (3-8) and has a slight male predominance. Clinically, bursal chondromatosis frequently presents as painless mass or with mild tenderness on palpation (3). Presentation in general is unilateral, and bilateral involvement is rarely seen. Plain radiograph and ultrasonography (USG) may be the initial and most important imaging modalities. Here, we are reporting a case of Synovial osteochondromatosis involving Baker's cysts of bilateral knee joints. ❑

CASE PRESENTATION

A 52-year-old male with an unremarkable medical history presented with a painful lump in the left popliteal fossa for eight months. The lump caused a sensation of crepitation du-

Address for correspondence:
Dr. Abhishek J. Arora, Additional Professor and Head
Department of Radiodiagnosis, AIIMS, Bibinagar, Hyderabad-508126
Email: dr.abhiarora@gmail.com

Article received on the 12th of October 2022 and accepted for publication on the 13th of December 2022

ring walking. There is no history of antecedent trauma. Clinical examination revealed a mass measuring 7 cm by 3 cm over the midline of the left popliteal fossa. The mass was tender, hard and slightly movable, and had well defined borders. There was similar fullness in the right popliteal fossa with mild tenderness on palpation. Anteroposterior and lateral radiographs of left knee revealed soft tissue opacification in the posterior aspect of the joint with multiple, small, calcified radiodense opacities within (Figure 1). Radiographs of the right knee revealed similar findings of increased radio-opacity and multiple calcified opacities in the popliteal fossa. Later, the patient came for USG of bilateral popliteal fossae, which was performed on BPL Alpinion E-CUBE i7 using a 3-12 MHz linear transducer. Longitudinal sonography demonstrated a well-defined anechoic cyst measuring 7.2 cm by 2.3 cm posteriorly, arising in the region of the gastrocnemius semimembranosus bursa, intermuscular plane on left side and extending till the subcutaneous plane with multiple intrabursal loose bodies of almost identical size within (Figure 2a). Transverse sonography of the right popliteal fossa revealed a well-defined anechoic cyst measuring 3.9 cm by 2.9 cm with base, body and neck between the medial head of the gastrocnemius and the semimembranosus tendons. Multiple intrabursal loose bodies were seen with in the base of the cyst (Figure 2b). The intrabursal loose bodies showed classical ultrasound appearance of cartilaginous loose bodies with hyperechoic center and hypoechoic chondroid periphery (Figure 2c). The above-described findings are compatible with the diagnosis of extraarticular synovial osteochondromatosis involving bilateral knees. All the metabolic blood and serum parameters and hematocrit of the patient were normal. Aspiration and surgical removal were advised, but the patient refused them. Conservative management with nonsteroidal anti inflammatory drugs, restriction of movements was suggested. ❑

DISCUSSION AND CONCLUSION

In 1877, Baker had described about eight cases of popliteal fossa swelling and established that this was secondary to the fluid escaping from

FIGURE 1. AP and lateral radiographs of bilateral knees showing soft tissue opacification (asterisks) in the posterior aspect of the joints with multiple calcified opacities (arrows) in the popliteal fossa

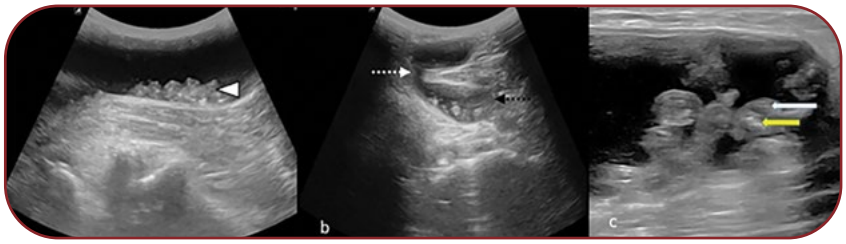

FIGURE 2. (a) Longitudinal sonogram of left popliteal fossa demonstrates cystic lesion with multiple intrabursal loose bodies (white arrow head); (b) transverse sonogram of right popliteal fossa showing base (black dotted arrow), neck (white dotted arrow) typical of Baker cyst with multiple loose bodies within the base; (c) magnified image of loose bodies shows hyperechoic center (yellow arrow) with hypoechoic chondroid periphery (white arrow)

knee joint into the gastrocnemius-semimembranosus bursa (9). Since then, his name was eponymously used for popliteal cysts. As Baker cyst are lined with synovium, they can be rarely subjected to synovial processes like osteochondromatosis (9-11). Cartilage nodules are produced by the benign metaplasia of the cells in the synovial membrane. These cartilage nodules may detach from the synovial lining and lie within the bursa. They may also reattach to the synovium and be reabsorbed (3). The free cartilage nodules after detaching from the synovial surface may undergo ossification (12). Radiologic findings of synovial osteochondromatosis involving bursae are frequently pathognomonic (3). Radiographs may demonstrate multiple calcifications in anatomical locations of bursa involved. Ultrasonography may reveal intrabursal osteochondral fragments, which may change position during dynamic examination. In a few cases the baker cyst may be small and only be filled with osteochondral bodies without fluid inside. In such cases, the Baker cysts could be easily overlooked or misdiagnosed (12). Pigmented villonodular synovitis, lipoma arborescence are entities which can mimic synovial osteochondromatosis as they also involve synovial process. However, the presence of calcifications excludes their diagnosis. Also, as Baker cysts communicate with knee joints, the above-mentioned synovial pathologies may coexist. Hence, whenever Baker's cyst is seen, scrutinizing the knee joint is essential. In our case, none of the above-mentioned pathologies were seen in the intra-articular synovium. Although plain radiographs and sonography are adequate in diagnosing most cases, MRI is of great use in doubtful cases. Management is usually surgical removal either through open or through arthroscopy (2, 13, 14). ❑

Conflicts of interest: none declared.?????????
Financial support: none declared.???????????

References

1. **Milgram JW.** Synovial osteochondromatosis: a histopathological study of thirty cases. *J Bone Joint Surg* 1977;59:792.
2. **Shah DP, Diwakar M, Dargar N.** Bakers Cyst with Synovial Chondromatosis of Knee – A Rare Case Report. *J Orthop* Case Rep 2016;6:17-19. doi:10.13107/jocr.2250-0685.366
3. **Murphey MD, Vidal JA, Fanburg-Smith JC, Gajewski DA.** Imaging of Synovial chondromatosis with radiologic-pathologic correlation. *RadioGraphics* 2007;27:1465-1488. https://doi.org/10.1148/rg.275075116
4. **Patel MR, Desai SS.** Tenosynovial osteochondromatosis of the extensor tendon of a digit: case report and review of the literature. *J Hand Surg* [Am] 1985;10:716-719.
5. **Covall DJ, Fowble CD.** Synovial chondromatosis of the biceps tendon sheath. *Orthop Rev* 1994;23:902-905.
6. **DeBenedetti MJ, Schwinn CP.** Tenosynovial chondromatosis in the hand. *J Bone Joint Surg Am* 1979;61:898-903.
7. **Fetsch JF, Vinh TN, Remotti F, et al.** Tenosynovial (extraarticular) chondromatosis: an analysis of 37 cases of an underrecognized clinicopathologic entity with a strong predilection for the hands and feet and a high local recurrence rate. *Am J Surg Pathol* 2003;27:1260-1268.
8. **Karlin CA, De Smet AA, Neff J, et al.** The variable manifestations of extraarticular synovial chondromatosis. *AJR Am J Roentgenol* 1981;137:731-735.
9. **Tsang J, Keung YM.** Sonography of Baker's Cyst (Popliteal Cyst): the Typical and Atypical Features. *Hong Kong Journal of Radiology* 2011;14:200-206.
10. **Steiner E, Steinbach LS, Schnarkowski P, et al.** Ganglia and cysts around joints. *Radiol Clin North Am* 1996;34:395-425, xi-xii.
11. **Torreggiani WC, Al-Ismail K, Munk PL, et al.** The imaging spectrum of Baker's (popliteal) cysts. *Clin Radiol* 2002;57:681-691.
12. **Li TY.** The Sonographic Spectrum of Baker Cysts. *Journal of Diagnostic Medical Sonography* 2018;34(1):38-48. doi:10.1177/8756479317733750
13. **Yu GV, Zema RL, Johnson RWS.** Synovial Osteochondromatosis. A case report and review of the literature. *J Am Podiatr Med Assoc* 2002;92:247-254.
14. **Kistler W.** Synovial chondromatosis of the knee joint: a rarity during childhood. *Eur J Pediatr Surg* 1991;1:237-239.