



What is Your Radiologic Diagnosis?

Radyolojik Tanınız Nedir?

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Joint puncture is performed on a 5-year-old male patient in order to show the cause of effusion detected on the MRI examination conducted in a center he applied due to swelling on the right knee. The patient, under antibiotic treatment, is discharged upon receiving that the puncture fluid is sterile. The patient applies to our hospital due to increase in pain and progression of the swelling to the lateral side of the knee 10 days after the joint puncture. Antero-Posterior (AP) graphy shows soft-tissue thickening on the right knee, with a particular thickening on the lateral side (Figure 1). Ultrasonography (US) examination shows normal intraarticular fluid quantity in the knee; however, edema and heterogenous thickening in the soft tissue

seen lateral to the knee are present. Fat-suppressed T2-weighted (T2W) MRI demonstrates hyperintense and edematous nodular lesions distally to the vastus lateralis muscle (Figure 2), and



Figure 1

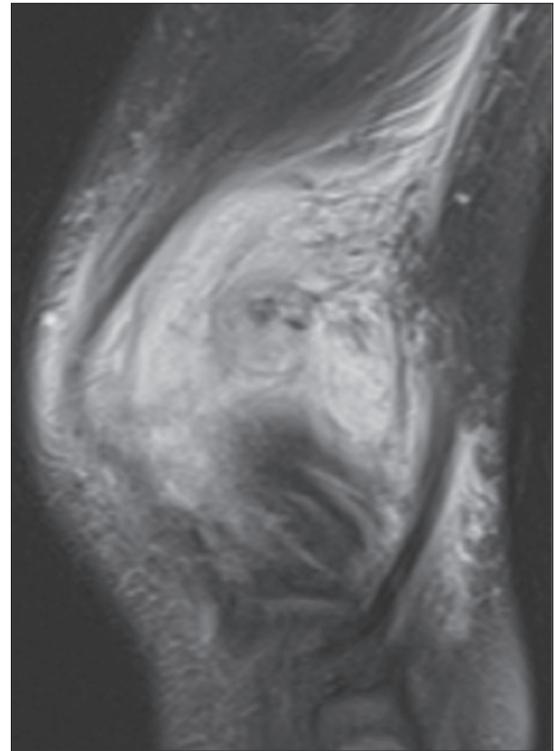


Figure 2

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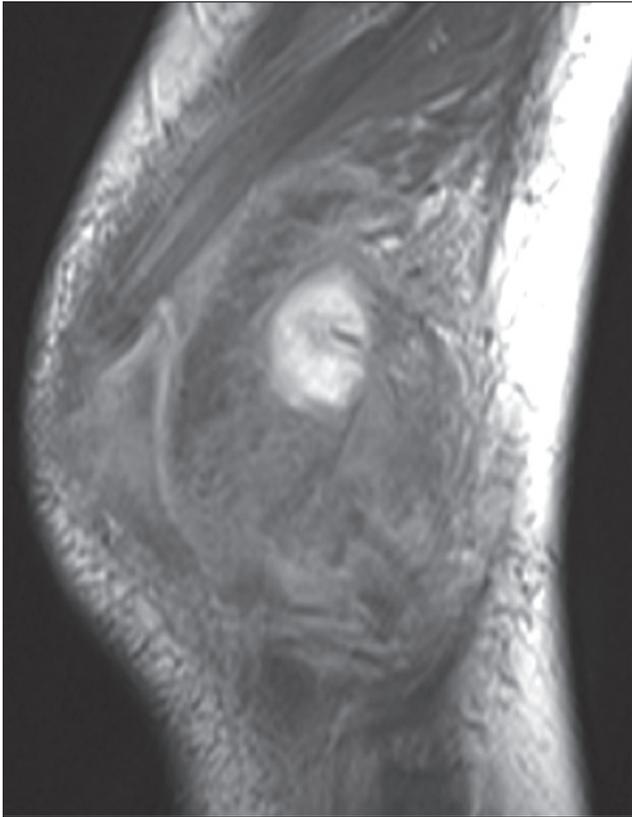


Figure 3

T1-weighted (T1W) MRI with contrast-matter shows hypointense nodular lesions with dense contrast brightness (Figure 3).

Biopsy is performed on the nodular lesion to exclude malignancy. What is your most probable diagnosis for the increase in the size of the swelling following biopsy and according to the fat-suppressed T2-weighted (Figure 4) and contrast-enhanced T1-weighted (Figure 5) control MRI examinations conducted upon ongoing pain and right knee AP graphy (Figure 6) performed?

DIAGNOSIS: Myositis ossificans

It was confirmed by radiography taken on the same day (Figure 6) that the hypo-intensity seen in both T1W and T2W images (Figures 4,5) on control MRI examinations are calcifications. Swift change of the lesion on follow-up, trauma history related to puncture and peripheral calcification development indicate myositis ossificans as diagnosis.

Short discussion: Myositis ossificans is a form of heterotypical ossification most commonly encountered in large muscle groups. Together with being seen in any age, it is rare in the population aged under 10 years. The most common age range is the adolescent and young adult period. It is mainly trauma-originated and shows different imaging features in the early (< 4 weeks), intermediate and late phases (> 8 weeks). Due to the fact that it imitates malignancies and infectious processes



Figure 4

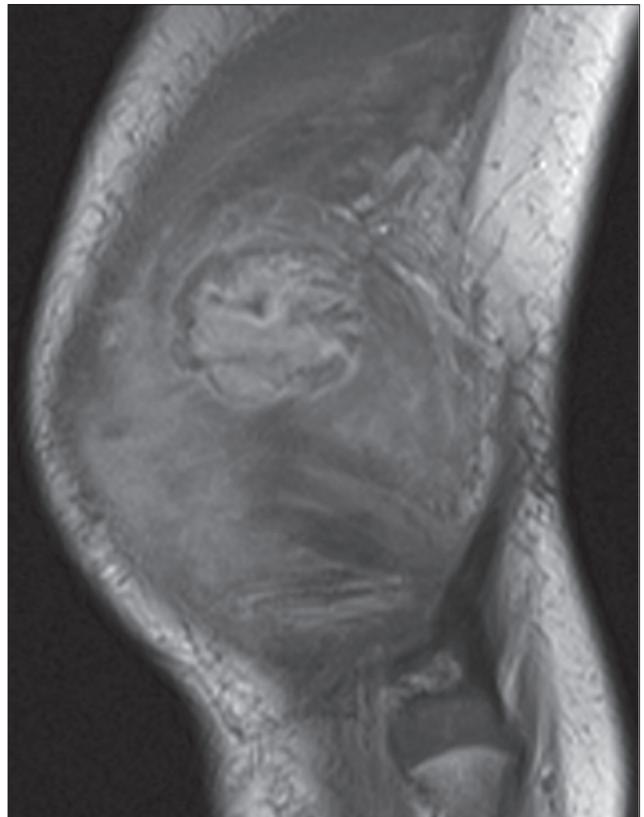


Figure 5



Figure 6

es in the early phase, understanding and recognizing correctly the imaging findings are important to avoid unnecessary biopsy and surgical procedures (1-4).

Radiography findings are normal except for the periosteal reaction that could be related to hematoma in the early phase. When the lesion matures, heterotypical ossification is seen. Radiolucent line between the heterotypical ossification and the neighboring bone can aid in differentiating parosteal sarcoma (5,6).

On ultrasonography, seeing 3 concentric rings including hypoechoic ring surrounding the lesion externally, hyperechoic layer representing the calcified rim medially, and hypoechoic

layer representing the fibroblastic stroma centrally are helpful in diagnosis (6).

In the early phase, MRI shows lesions with irregular margins isodense with the muscle on T1W, heterogeneously hyperintense on T2W and diffuse-contrasted in post-contrast series. Intense edema is seen in the surrounding muscle tissue. The infection in this phase can be confused with neoplastic masses like sarcoma or lymphoma. Predominant peripheral edema and its regression in advancing phases are important findings in differentiating with sarcoma and other neoplasia. It can be differentiated from infection with having no local temperature increase and no elevated white blood cells. In addition, mesenchymal cells and abnormal mitosis of the fibroblasts in the early phase and the striate pattern the edema produces on T2W and post-contrast T1W images by covering the muscle fibers can aid in the differential diagnosis. Late phase MRI findings generally have a non-contrasted image peripherally hypointense due to ossification and centrally iso-hyperintense due to the presence of bone marrow in both T1w and T2W images (4,7).

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