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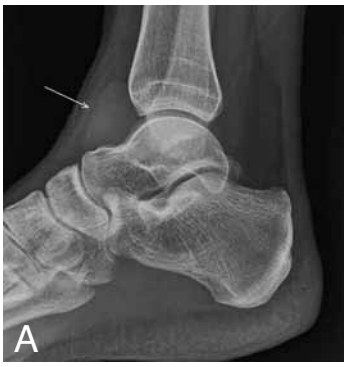
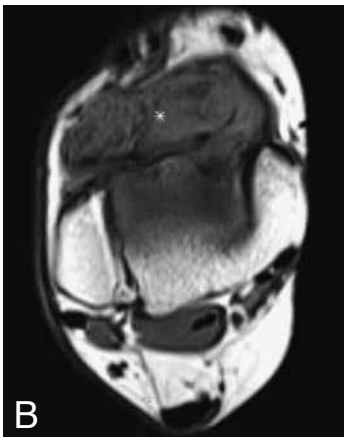
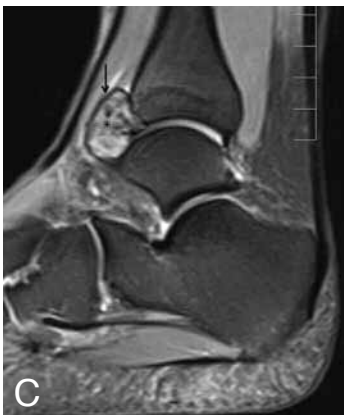
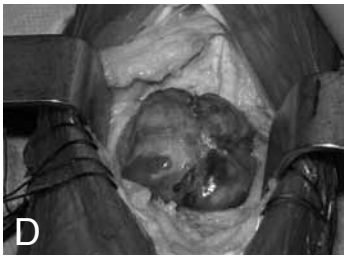
IMAGES IN CLINICAL RADIOLOGY









Pigmented villonodular synovitis of the ankle presenting as a persisting ankle effusion

C. Verlinden[1], F.M. Vanhoenacker[2,3,4], P. Boone[1]

A 38-year-old woman was referred to our department with persisting pain and swelling of the right ankle, 10 months following an inversion trauma. Initial standard radiographs were unremarkable. Conservative treatment with physiotherapy and local infiltration was unsuccessful. Three month later, repeated plain radiographs revealed a slightly radiodense mass at the anterior aspect of the talocrural joint (Fig. A, white arrow). An MRI was performed for further characterization. These images show an intra-articular nodular mass within the anterior ankle joint recess. The lesion was of intermediate to low signal intensity on axial T1-weighted (WI) images (Fig. B, star). On sagittal fatsuppressed T2-WI, the lesion contained multiple intralesional areas of low signal intensity interspersed with areas of high signal (Fig. C, star). A peripheral low signal intensity rim was seen, in keeping with hemosiderin deposition within the synovium (Fig. C, black arrow). Blooming artefact was seen on gradient echo imaging (not shown). Based on the imaging findings, the diagnosis of Pigmented VilloNodular Synovitis (PVNS) was made, which was confirmed on surgery (Fig. D, surgical view showing a lesion with black pigment within the synovium) and subsequent histological examination. The postoperative course was uneventful.

Comment

PVNS is a relatively rare proliferative disorder of the synovium, characterized by the formation of nodular synovial masses with a unique histological structure mainly consisting of hemosiderin deposits. The predominantly affected joint is the knee, followed by the ankle and in rare cases the wrist, hip, shoulder and elbow. The etiology of the disease remains a matter of debate. Some authors indicate trauma and haemarthrosis as primary trigger of the synovial proliferation. The most typical clinical presentation is painful swelling around a joint. Standard radiographs may be normal in an early stage, or may reveal uncalcified radiodense masses. Later, rapid proliferation of the synovium may cause erosions and marginal sclerosis in the adjacent bone. CT is rarely used for diagnosis, but it may evaluate more subtle erosions and can be used for imaging guided core biopsy. For early detection, MRI is the preferred imaging technique and is currently referred as the gold standard. Both T1-and T2-WI images reveal hypointense intra-articular masses, indicative of hemosiderin deposition. Fatsuppressed T2-WI images may show areas of interspersed fluid entrapped within the thickened and hemosiderin-laden synovium. Gradient echo imaging may be useful to demonstrate "blooming" artefact of the hemosiderin deposits. After administration of gadolinium contrast, marked enhancement is the rule. These characteristic findings on MRI images allow a differentiation between other proliferative diseases about the joints, such as rheumatoid arthritis, synovial sarcoma, osteochondromatosis and lipoma arborescens. Surgery remains the gold standard in treatment of PVNS. A synovectomy with total excision should be performed in all cases. Overall, PVNS has a high risk of recurrence.

Reference

1. Hao D.P., Zhang J.Z., Xu W.J., Wang Z.C., Wang X.N.: Pigmented Villonodular Synovitis of the Ankle, Radiologic characteristics. *J Am Podiatr Med Assoc*, 2011, 101: 252-258.

Department of 1. Orthopaedic Surgery, 2. Radiology, AZ Sint-Maarten Duffel-Mechelen, Mechelen, 3. Department of Radiology, Antwerp University Hospital, Edegem, 4. Faculty of Medicine and Health Sciences, University of Ghent, Ghent, Belgium.