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Case Report

Lipoma arborescens with patellofemoral osteoarthritis and genu valgum [☆]

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ABSTRACT

Lipoma arborescens is a rare benign intra articular lesion characterized by lipomatous proliferation of the synovium. The condition typically affects the knee presenting with atraumatic pain and swelling. It should be considered in the differential diagnosis of monoarthritis and joint effusion. Diagnosis is made on MRI with characteristic features. We present a rare case of lipoma arborescens with patellofemoral osteoarthritis and genu valgum. We discuss the clinical presentation, radiological findings, and management.

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Introduction

Lipoma arborescens is a rare benign intra articular condition characterized by synovial proliferation where the connective tissue is replaced with mature adipocytes [1]. The aetiology remains unclear, it can be idiopathic or associated with conditions that cause chronic irritation to the synovium. These include trauma, degeneration, and inflammatory joint diseases [2]. The knee is the commonest affected joint, involvement is usually unilateral and patients typically present in the fifth to seventh decades of life [3,4]. The clinical presentation is of swelling and arthralgia frequently with an associated ef-

fusion. The diagnosis is based on the typical appearances on MRI and recommended treatment is open or arthroscopic synovectomy.

Osteoarthritic changes secondary to the presence of lipoma arborescens have been hypothesised, however rarely reported in the literature. Some have even suggested that progressive joint degeneration could be delayed if prompt diagnosis and therapeutic synovectomy is performed [5,6]. We present a rare case of lipoma arborescens with associated patellofemoral osteoarthritis and genu valgum; and discuss the clinical presentation and radiological findings.

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Case report

A 45-years-old female presented to the elective outpatient clinic with a 2-year history of right knee pain. She was seen at a different hospital several months prior where the pain was attributed to osteoarthritis and high tibial osteotomy was considered in order to relieve symptoms.

She had a BMI of 29.8 with no relevant medical conditions. On inspection the patient was mobilizing with a valgus thrust gait with an obvious valgus deformity of 5-10 degrees which was partially correctable. On examination there was a mild effusion on patellar tap and sweep test and symmetrical quadriceps bulk.

The patient reported pain predominantly over the anterior aspect of the knee. There was no tenderness over the medial or lateral joint line. There was no evidence of ligament instability. The patient had full range of motion and was neurovascularly intact. There was no abnormality of the asymptomatic knee.

Laboratory tests showed a mildly elevated C-reactive protein of 14 (normal range 0-5 mg/L) and Erythrocyte sedimentation rate of 72 (normal range 0-20 mm/hr). There were normal values for C-reactive protein, rheumatoid factor and anticyclic citrullinated peptides (Anti-CCP).

Weightbearing radiographs of the right knee were performed which demonstrated genu valgum of approximately 15 degrees (Fig. 1A). There was also severe patellofemoral joint

degenerative change (Fig. 1B) and minimal medial compartment loss of joint space.

An MRI of the knee was subsequently performed to rule out intra articular pathology as a contributor of the pain. The MRI confirmed severe patellofemoral arthropathy and mild medial compartment loss of joint space with comparatively preserved lateral compartment joint space (Fig. 2). There was no patella alta, trochlear dysplasia, or patellar translation. The MRI also demonstrated a further finding of a large joint effusion with synovial lipoma arborescens (Figs. 3 and 4).

The plain films and MRI resulted in a diagnosis of lipoma arborescens with severe patellofemoral osteoarthritis and genu valgum. The patient was followed up in the outpatient clinic where the pain, swelling, and genu valgum persisted. The patient has decided to trial conservative measures with discussion of surgical treatment options at a later date.

Discussion

Lipoma arborescens is a rare entity with fewer than 100 cases reported in the literature before 2016 [7]. It should be considered in the differential diagnosis of monoarthritis with effusion and synovial thickening which includes pigmented villous nodular synovitis (PVNS), synovial lipoma, synovial chondromatosis, gouty arthropathy, tuberculous, and rheumatoid arthritis.

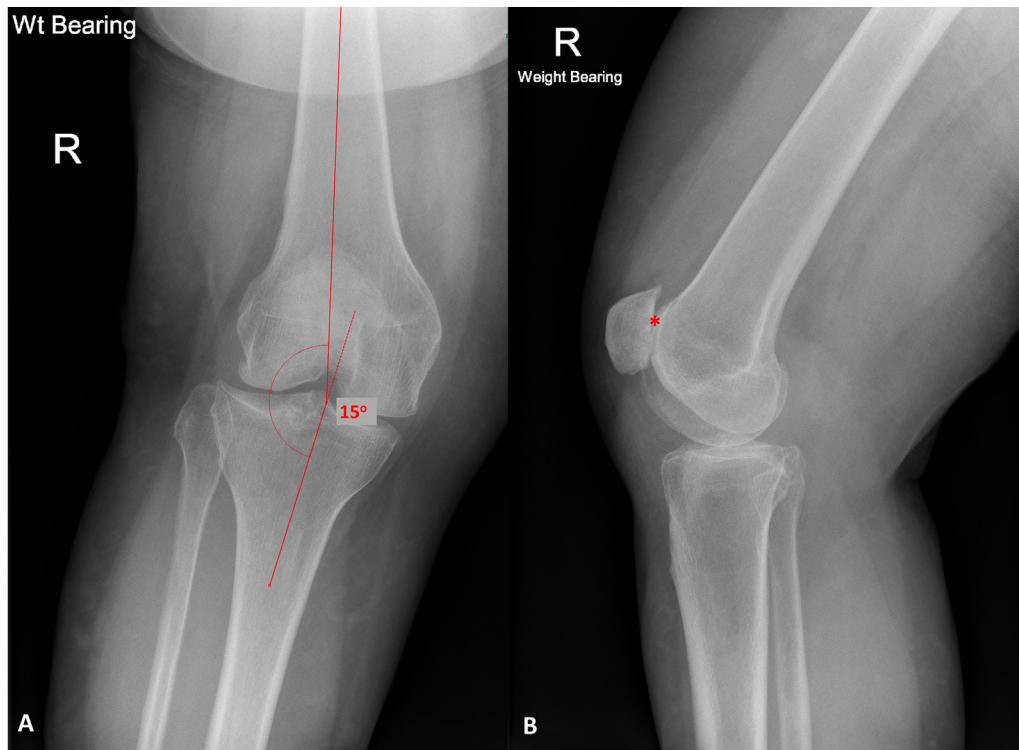


Fig. 1 – AP (A) and lateral (B) radiographs of the right knee. There is an anatomical tibiofemoral angle of 15 degrees in keeping with genu valgum (lines). There is severe patellofemoral osteoarthritis as evidenced by joint space loss and subchondral sclerosis (asterisk).

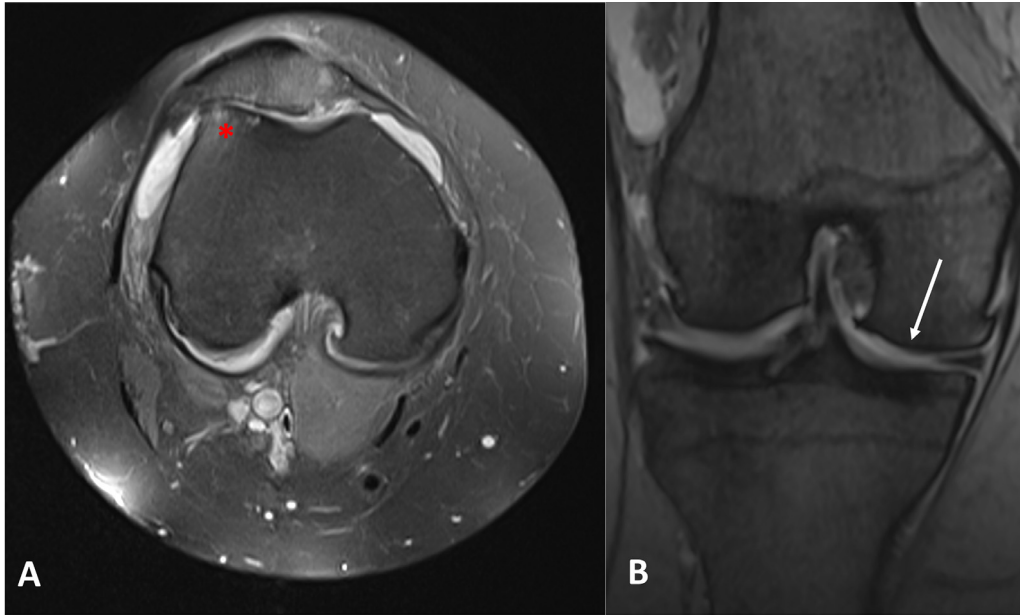


Fig. 2 – Axial PD fluid sensitive (A) and coronal T2 (B) MRI sequences. There is severe patellofemoral arthropathy with marked loss of joint space, full thickness loss of articular cartilage, cortical irregularity and underlying cystic change with marrow oedema signal (asterisk). There is mild loss of medial compartment joint space and attenuation of articular cartilage (arrow).

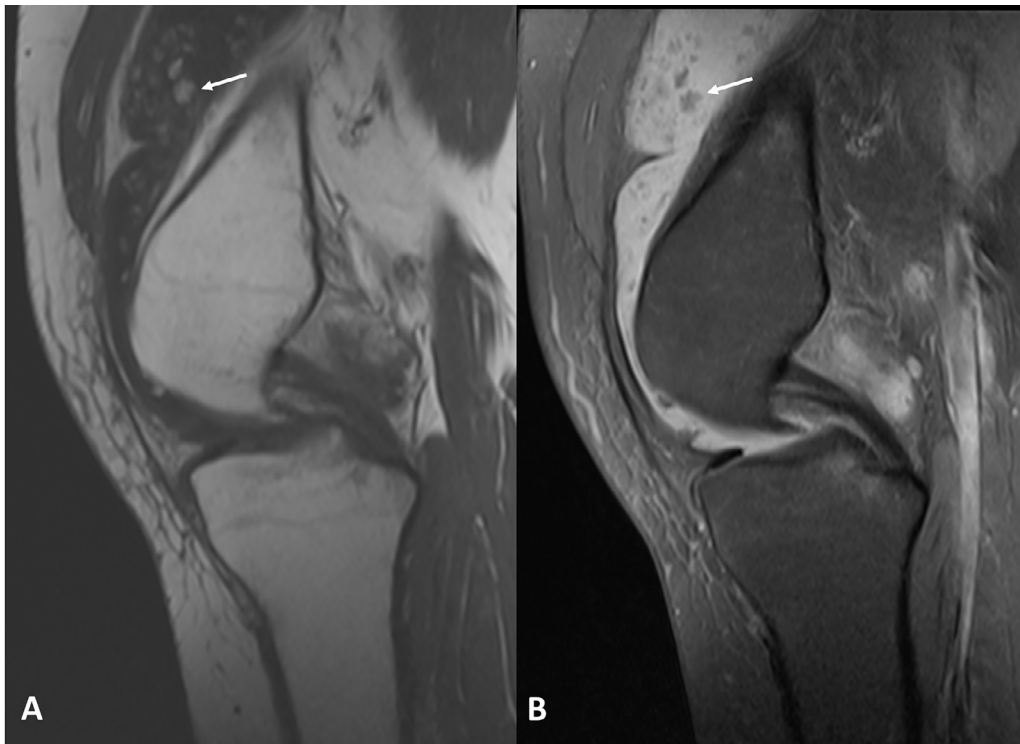


Fig. 3 – Sagittal T1 (A) and sagittal PD fat saturated (B) MRI sequences. There is a large knee joint effusion with synovial proliferation. Many of the synovial fronds demonstrate T1 hyperintensity (arrow) which suppresses on the fat saturation sequence (arrow).

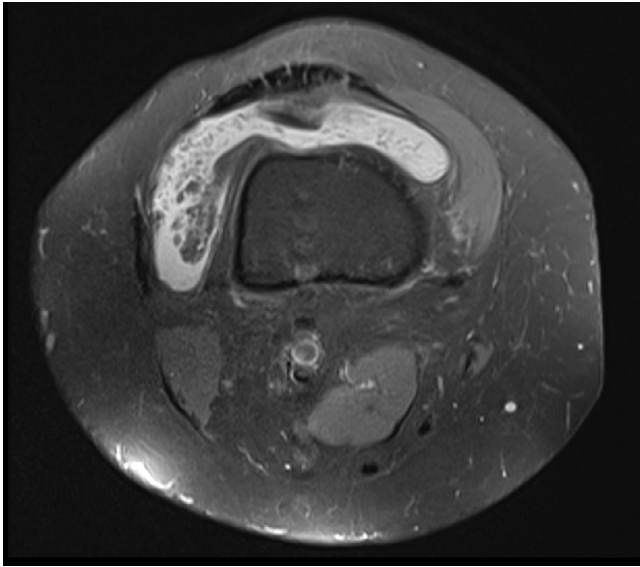


Fig. 4 – Axial PD fluid sensitive sequence demonstrating frond like synovial proliferation within the prepatellar space.

The diagnosis of lipoma arborescens is based on typical findings on MRI, which is considered the gold standard [8]. As in our case the typical MRI features are of frond like masses which arise from the synovium. These have high signal intensity on both T1 and T2 weighted images that suppress on fat saturated sequences, similar to subcutaneous fat. There is often an associated joint effusion.

There are only a few case reports in current literature that suggest lipoma arborescens can contribute to developing osteoarthritis [5,6]. In our case the patient had lipoma arborescens with severe patellofemoral arthropathy. These 2 conditions may be associated whereby the lipoma arborescens could have caused patellofemoral instability and subsequently patellofemoral osteoarthritis.

To our knowledge an association between lipoma arborescens and genu valgum has not been described previously. In our case the patient had no lateral joint line tenderness or a risk factor for developing genu valgum such as trauma, infection, rickets, obesity or skeletal dysplasia. The patient reported the knee deformity started to develop in the last 2 years at the same time of onset of the anterior knee pain. Degenerative disease can also contribute to genu valgum; however the plain films and MRI did not demonstrate significant arthropathy of the lateral compartment. Therefore, lipoma arborescens may be a cause of genu valgum, however further studies are required.

In light of the plain film findings and the clinical genu valgum the patient was given a diagnosis of patellofemoral

pain syndrome, referred for physiotherapy and scheduled for a high tibial osteotomy procedure. However following the MRI a new diagnosis of lipoma arborescens was made with new management considerations including knee arthroplasty and arthroscopic synovectomy. This highlights the importance of considering MRI in a young patient with atraumatic knee swelling and monoarthritis.

Conclusion

Lipoma arborescens demonstrates characteristic features on MRI, which is the gold standard for diagnosis. We suggest lipoma arborescens may be a cause of osteoarthritis and genu valgum. Prompt diagnosis and subsequent therapeutic synovectomy can therefore potentially prevent or delay progressive degenerative disease in selected patients, however further studies are required.

Patient consent

Verbal and written informed consent for the publication of this case report was obtained from the patient.

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