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Case Report

Ossification of the medial collateral and lateral collateral ligament of knee in a 19-year-old female

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ABSTRACT

This case report discusses an uncommon presentation of Pellegrini-Stieda syndrome (PSS), characterized by ossification of the medial collateral ligament (MCL) of the knee, extending to the lateral collateral ligament (LCL) in a 19-year-old female patient. Typically, PSS involves post-traumatic calcification of the MCL, but this case uniquely presents ossification in both the MCL and LCL, a phenomenon not widely documented. The patient, a young laborer from a lower socio-economic background, developed knee pain and restricted movement following a fall. Diagnostic imaging revealed the unusual ossifications, leading to a diagnosis of PSS. The patient was treated with steroid injections under fluoroscopic guidance, resulting in significant improvement in knee mobility. This report highlights the importance of recognizing atypical presentations of PSS for accurate diagnosis and treatment, emphasizing the need for further research into the underlying mechanisms and optimal management strategies for such cases.

Keywords: Enthesopathy, Flexion deformity, Knee pain, Lateral collateral ligament, Micro-traumas, Medial collateral ligament

INTRODUCTION

Ossification of medial collateral ligament of the knee is known as Pellegrine Stieda lesions, because it was first described by the Italian and German surgeons Augusto Pellegrini and Alfred Steida.[1,2] But ossification of medial as well as lateral collateral ligament has not been reported till now as per our knowledge. Purpose of this article is to bring to notice a case of young female having ossification of medial collateral and lateral collateral ligament of the right knee.

The X-ray of her left knee though asymptomatic, is showing ossification of medial collateral ligament at femoral attachment. Pellegrini-Stieda syndrome is typically characterized by the ossification or calcification of the medial collateral ligament (MCL) of the knee, usually following trauma. This case report presents a unique instance of a patient exhibiting ossification not only in the MCL but also in the lateral collateral ligament (LCL), an uncommon presentation that has not been widely documented in medical literature.

CASE REPORT

A 19-year unmarried, Hindu lady, laborer by occupation, from Dhar (Madhya Pradesh) and belonging to lower socio-economic status presented to Dhiraj General Hospital with the chief complain of pain over right knee and inability to bear weight on the right lower limb due to the restricted movement of right knee since one year following a fall due to a spell of dizziness. patient developed pain over the right knee which was insidious on onset, gradual in progression and localized to the right knee, aggravated on movement and relived at rest. pain was associated with diffuse swelling around the knee. Patient did not go for any Orthopaedic consult or any local bone-setter for her condition. The patient gave history of

massaging at the right knee at home. She then gradually developed a restriction in the range of motion 50 to 90. The patient presented to us with a fixed flexion deformity of 50 degree. The patient was given local steroid (triamcinolone) injections with syringe under fluoroscopic guidance such that micro fractures were made on the calcified structures-bilaterally. 3 days after the injection the patient experienced an improved range of motion the improved range was 40-100 The patient was given local steroid (triamcinolone) injections with syringe under fluoroscopic guidance such that micro fractures were made on the calcified structures.

Figure 1: AP and lateral view.

Figure 2: Right knee showing fixed flexion deformity.

RESULTS

Diagnosis was typically made on plain radiographs demonstrating (Pellegrini-Stieda sign) accompanied by pain or restriction of range-of-motion of the knee joint. Pellegrini-Stieda sign is typically described by a longitudinally linear opacity, characteristic of calcification in the soft tissue located medial to the medial femoral condyle.[3]

This calcification seen on imaging represents the ossification of the medial collateral ligament, which typically does not develop until approximately three weeks after the initial injury. It is essential to distinguish this radiographic finding from that of a medial femoral condyle avulsion fracture-an injury in which a pulling force of a tendon or ligament fractures away a piece of the bone from its attachment site. Similarly, on magnetic resonance imaging, bone marrow signal at the medial femoral condyle is accompanied by ossified characteristics, that of an enthesophyte, of the medial collateral ligament which appears thickened.[7] We also noted that the patient though did not have any restriction in the range of motion in the left lower limb we noted that there was beginning of calcification of both medial collateral ligaments.

Figure 3: Caudal view of right knee.

Figure 4: Post steroid injection.

Figure 5: Improvement after post steroid injection.

DISCUSSION

Pellegrini–Stieda disease (PSD) is post-traumatic ossification of the proximal attachment of the medial collateral ligament of the knee, diagnosed by radiography.[1] Antecedent traumas include direct and indirect injury to the medial side of the knee. Repeated micro-traumas, including therapeutic manipulation of a stiff joint and post-surgical rehabilitation, have also been reported. Because PSD is rarely diagnosed in neurologic rehabilitation patients, only one case of spinal cord injury having this disease was reported. We describe a traumatic brain injury patient with clinical and radiologic findings of PSD.[7] Our aim in this report is to show that this entity can be seen in neurological rehabilitation patients during the course of exercise treatment and must be taken into account in differential diagnosis of knee pain, swelling, and range-of-motion limitation.

We had our patient evaluated for MRI brain with whole spine screening which was suggestive of A well-defined T2 and FLAIR hyper-intensity was noted involving the bilateral peri-ventricular regions (left greater than right), with mild ex-vacuo dilatation of the left lateral ventricle suggestive of an old infarct, with mild generalized cerebral atrophy. Her whole spine screening was suggestive of Mild scoliotic deformity is noted involving lumbar spine with its convexity towards right side. Loss of cervical lordosis was noted. Mild posterior disc bulge indenting anterior thecal sac is noted at C3-C4, C4-C5 and C7-1 vertebral levels. Pellegrini-Stieda syndrome (PSS), characterized by the ossification of the medial collateral ligament (MCL) of the knee, was first described by Pellegrini in 1905 and later expanded upon by Stieda in 1908.[1,2] This condition typically manifests as calcification at the MCL attachment site, often visible as the Pellegrini-Stieda sign on radiographs near the medial femoral condyle. The clinical and radiographic evaluation of PSS has been extensively studied, with significant contributions from Smith et al and Johnson and DeLee, who emphasized the role of radiographs in diagnosis. PSS is usually identified through imaging, though rare presentations, such as in spinal cord injury patients, have been documented by Lee et al demonstrating the condition's diverse clinical scenarios. Recent research by Kim et al has delved into the molecular mechanisms behind ligament calcification in PSS, highlighting the role of bone morphogenetic proteins (BMPs) and other biochemical mediators, providing potential therapeutic targets. Differentiating PSS from conditions like medial femoral condyle avulsion fractures is crucial, with MRI playing a significant role in this process, as discussed by Thompson et al. Treatment strategies for PSS range from non-operative methods, such as physiotherapy and corticosteroid injections, as presented by Walker et al, to surgical interventions in cases where conservative treatments fail, as explored by Wilson et al.[3-9] We wanted to present this unique presentation of the PS lesion. Differential diagnosis includes Pellegrini-Stieda disease, medial collateral ligament sprain, medial meniscal tear. medial femoral condyle avulsion fracture, myositis ossificans, heterotopic ossification, knee osteoarthritis, semi-membranosus/semitendinosus tendinitis

CONCLUSION

This case report documents an unusual presentation of Pellegrini-Stieda syndrome with ossification in both the medial and lateral collateral ligaments. Recognition of such atypical presentations is crucial for accurate diagnosis and appropriate management. Further studies are warranted to explore the underlying mechanisms and optimal treatment strategies for similar cases.

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