Pellegrini-Stieda Syndrome: Report Of Two Cases

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Citation

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Abstract

We report two cases of Pellegrini-Stieda Syndrome (PSS) following trauma to the knee. One of the two cases had computed tomography (CT) scan and magnetic resonance imaging (MRI), in addition to the x-ray examinations of the knee. We suggest further imaging evaluation of soft tissue calcifications in the region of the medial femoral epicondyle with MRI, especially if pain and some limitation of movement are observed. We report these two cases because of the rarity of the condition, and to highlight the importance of MRI in the anatomical delineation of the lesion, even in a developing country.

ABSTRACT

We report two cases of Pellegrini-Stieda Syndrome (PSS) following trauma to the knee. One of the two cases had computed tomography (CT) scan and magnetic resonance imaging (MRI), in addition to the x-ray examinations of the knee. We suggest further imaging evaluation of soft tissue calcifications in the region of the medial femoral epicondyle with MRI, especially if pain and some limitation of movement are observed. We report these two cases because of the rarity of the condition, and to highlight the importance of MRI in the anatomical delineation of the lesion, even in a developing country.

INTRODUCTION

Pain and limitation of movement as a result of dystrophic calcification or ossification of the femoral attachment of the medial collateral ligament (MCL) of the knee following injury to the ligament is called Pellegrini-Stieda Syndrome (PSS). The initial injury is usually due to a valgus stress with disruption of the fibres of the MCL. [1] The patients present with pain and restricted movement; and the condition is rare. [2] Most of the patients with post-traumatic calcification of the proximal aspect of the MCL are asymptomatic; and the term is only reserved for those few patients who are symptomatic. [3].

CASE REPORT

AB is a 27 year old lady who presented with a ten months' history of severe, recurrent pain in the left knee. She sustained a closed injury to the knee 10 years earlier following a minor road traffic accident involving a motor bike. She was treated at a private hospital immediately after the accident, and there was no fracture or dislocation. On examination, her gait was normal with mild tenderness over the medial border of the left knee. Full passive extension of the knee was rather difficult. There was no ligamentous laxity. Knee x-ray examination showed a linear, soft tissue opacity medial to the femoral condyle, suggestive of calcification of the proximal aspect of the MCL (Figures 1 - 3). Computed tomography (CT) examination of the knee showed heterotopic ossification of the femoral attachment of the MCL, with attenuation coefficient of 1219 HU (Figures 4 and 5). Magnetic resonance imaging (MRI) of the knee confirmed a corticated structure within the proximal MCL, with no evidence of fat content (Figures 6 - 11). There were no other abnormalities on MRI evaluation. A diagnosis of PSS was made based on the imaging and clinical findings.

DK is a 42 year old man who presented with a two year history of recurrent pain in the inner aspect of the right knee. He had no history of trauma in the few years preceding the onset of the pain. He however remembered an occasion he was roughly tackled during a game of football about 20 years earlier. The injury was not bad enough to warrant hospital care. On examination, the gait was normal. The inner aspect of the right knee was tender, but there was no swelling. There was moderate limitation of extension at the knee. X-ray examination showed a linear soft tissue calcification adjacent to the medial femoral epicondyle (Figures 12 and 13). Associated degenerative changes as evidenced by the presence of osteophytes were also observed (Figure 14). He could not have an MRI examination which was suggested as a result of financial constraints.

Figure 1

Figure 1: Pellegrini-Stieda Syndrome (Patient AB). Anteroposterior radiograph showing soft tissue calcification adjacent to the medial femoral condyle (arrow).

Figure 2

Figure 2: Pellegrini-Stieda Syndrome (Patient AB). Anteroposterior radiograph showing soft tissue calcification adjacent to the medial femoral condyle (arrow).

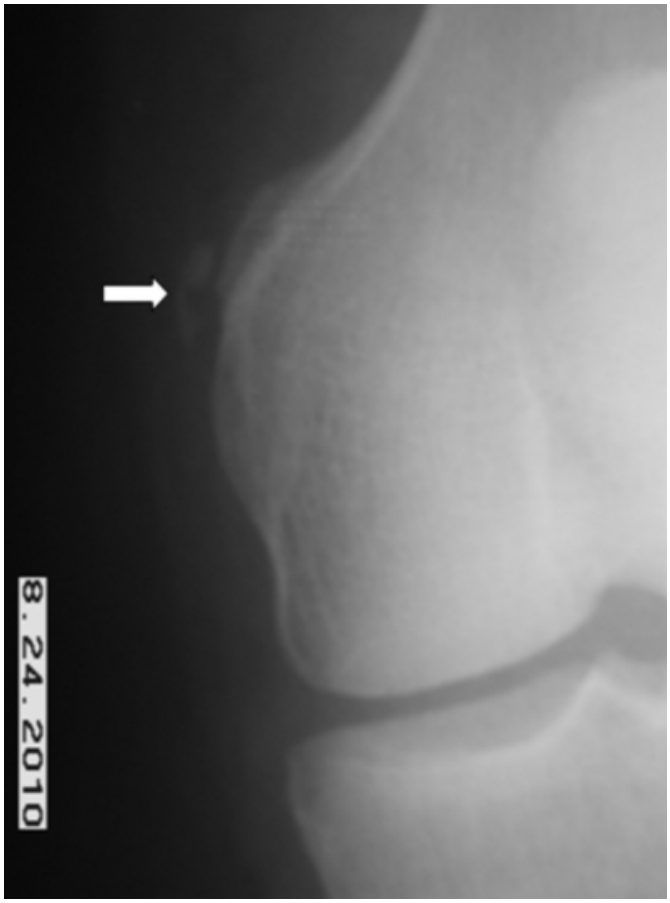

Figure 3

Figure 3: Pellegrini-Stieda Syndrome (Patient AB). Anteroposterior radiograph showing soft tissue calcification adjacent to the medial femoral condyle (arrow).

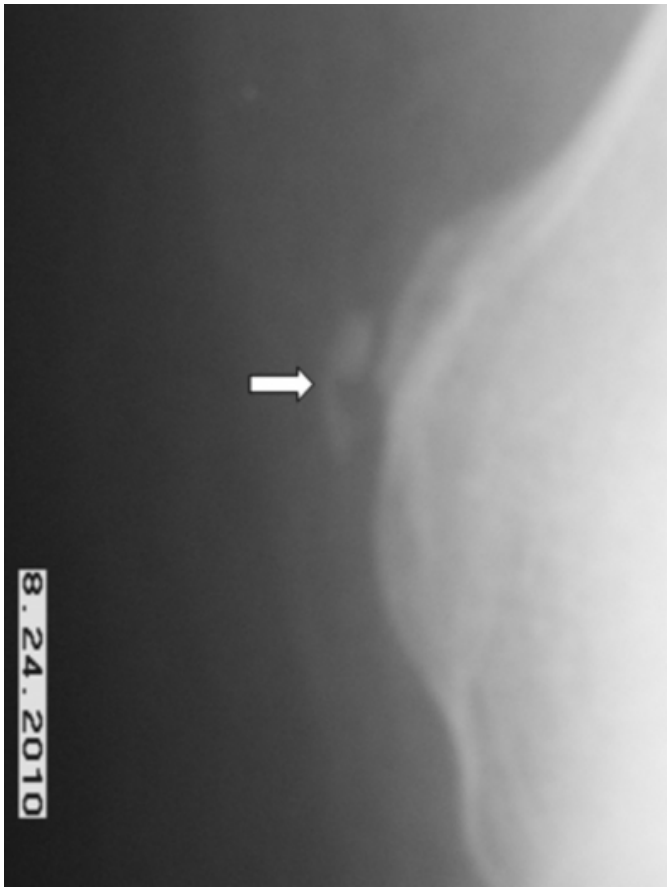

Figure 4

Figure 4: Pellegrini-Stieda Syndrome (Patient AB). Axial CT scan (soft tissue window) showing soft tissue calcification adjacent to the medial femoral condyle (arrow).

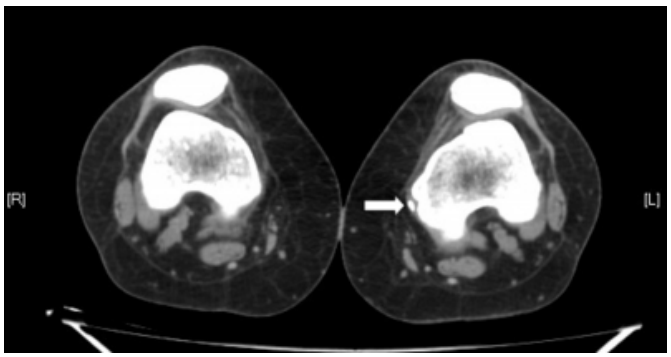

Figure 5

Figure 5: Pellegrini-Stieda Syndrome (Patient AB). Axial CT scan (bone window) showing soft tissue calcification adjacent to the medial femoral condyle (arrow).

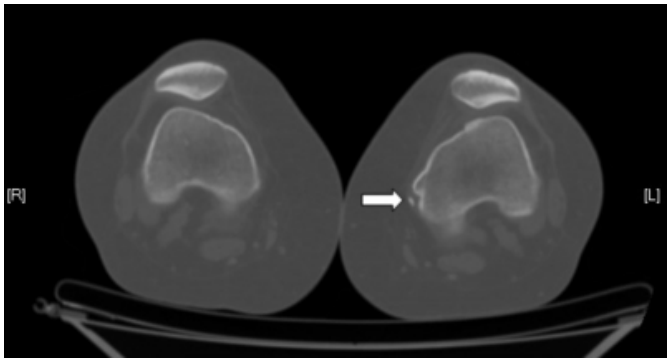

Figure 6

Figure 6: Pellegrini-Stieda Syndrome (Patient AB). Coronal T1-weighted spin echo (SE T1) MRI showing calcification in the proximal aspect of the MCL (arrow).

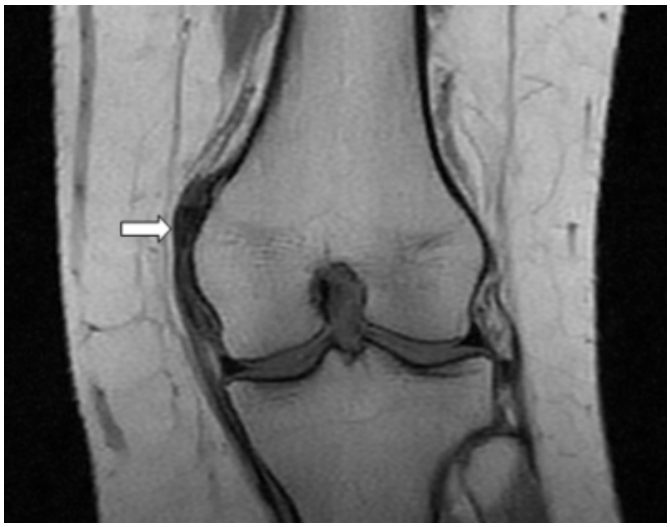

Figure 7

Figure 7: Pellegrini-Stieda Syndrome (Patient AB). Axial proton density fast spin echo (PD FSE T1) MRI showing calcification in the proximal aspect of the MCL (arrow).

Figure 8

Figure 8: Pellegrini-Stieda Syndrome (Patient AB). Axial T2 gradient echo (T2 GRE) MRI showing calcification in the proximal aspect of the MCL (arrow).

Figure 9

Figure 9: Pellegrini-Stieda Syndrome (Patient AB). Axial fast relaxation fast spin echo (FRFSE) T2 MRI, showing calcification in the proximal aspect of the MCL (arrow).

Figure 10

Figure 10: Pellegrini-Stieda Syndrome (Patient AB). Axial SE T1 MRI showing corticated structure in the proximal aspect of the MCL (arrow).

Figure 11

Figure 11: Pellegrini-Stieda Syndrome (Patient AB). Coronal short T1 inversion recovery (STIR) MRI, showing calcification in the proximal aspect of the MCL (arrow).

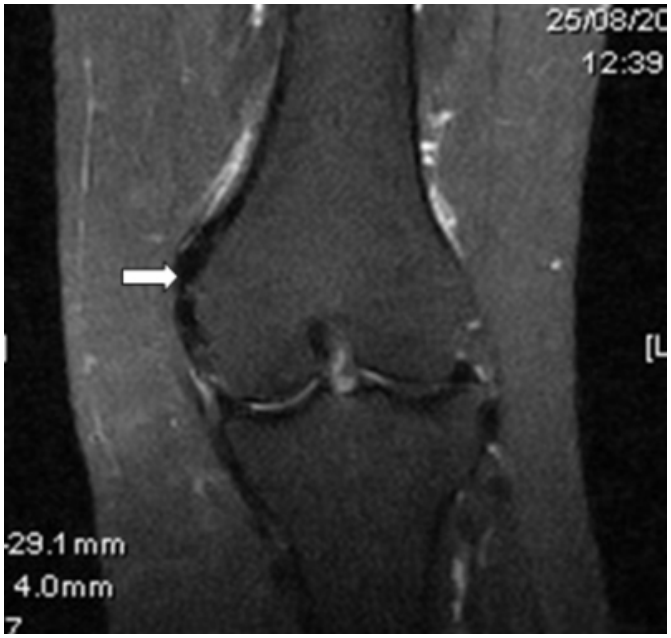

Figure 12

Figure 12: Pellegrini-Stieda Syndrome (Patient DK), showing soft tissue calcification adjacent to the medial femoral condyle (arrow).

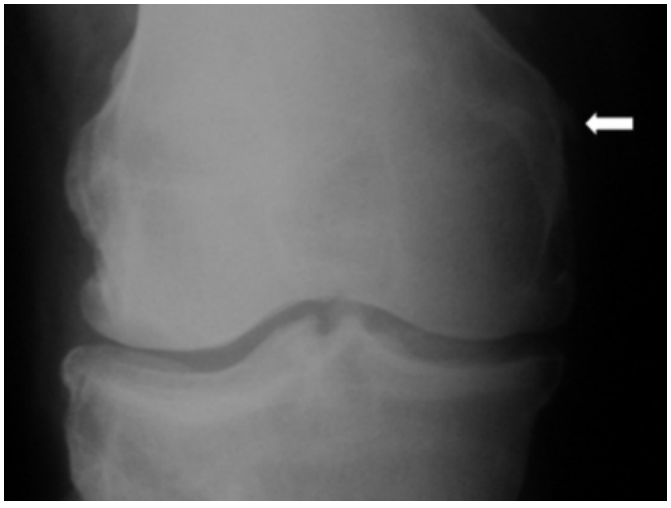

Figure 13

Figure 13: Pellegrini-Stieda Syndrome (Patient DK), showing soft tissue calcification adjacent to the medial femoral epicondyle (arrow).

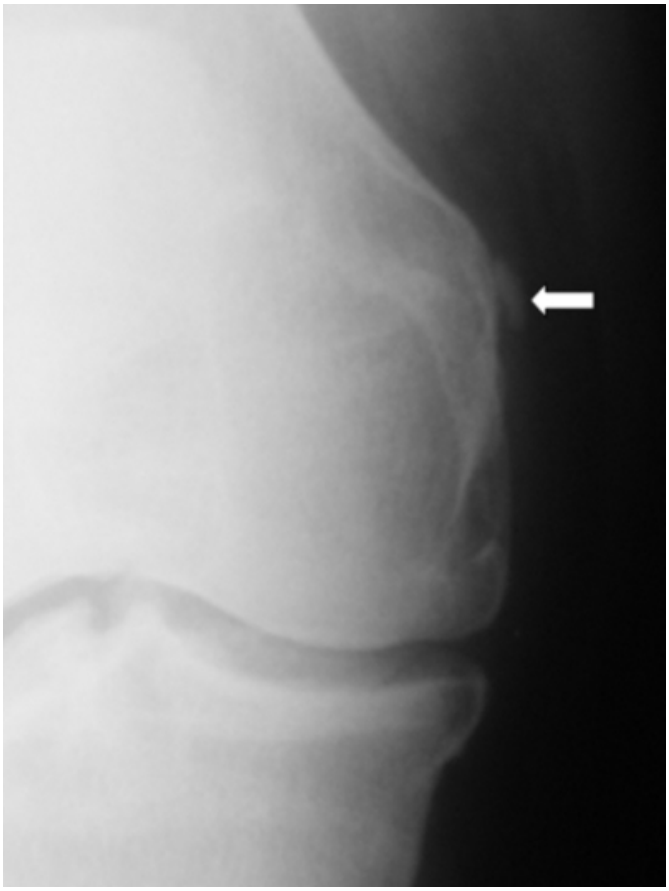

Figure 14

Figure 14: Pellegrini-Stieda Syndrome (Patient DK) showing associated osteoarthritis.

DISCUSSION

The MCL is a thickening of the fibrous capsule of the knee joint which extends from the femoral medial epicondyle to the medial condyle and superior part of the medial surface of the tibia. It is partly continuous with the tendon of the adductor magnus muscle. The deep fibres of the MCL are firmly attached to the medial meniscus and the fibrous capsule. The MCL (along with the lateral collateral ligament) normally prevent disruption of the sides of the knee joint. [4] Injury to the MCL may be associated with injuries to other structures especially the medial meniscus and the anterior cruciate ligament.

The recommended MRI protocol for evaluating suspected PSS is the $T2^*$ gradient echo. [1] The extent of the osseous fragment in PSS is delineated as an area of signal void on $T2^*$ weighted MRI, while the maturity of the fragment is shown by high signals on T1 weighted imaging, representing fat. [5] These findings are helpful in determining preoperative planning of resection of massive fragments. Our patient (AB) exhibited no evidence of fatty marrow within the calcified segment of the MCL.

Soft tissue calcification in the proximity of the femoral medial epicondyle, on x-ray examinations does not necessarily translate to PSS even in the presence of symptoms. The calcification may also involve the adductor magnus tendon. It is for this reason that Mendes LF et al suggested that PSS could be a heterogeneous disorder consisting of four types but with similar clinical presentations. [6] MRI is invaluable in defining the anatomy of these structures. Our patient (AB) showed definite evidence of involvement of the MCL and not the adductor magnus tendon on MRI evaluation.

Although we had no doubts in the presentation of our patients since both had no fever or other clinical features that may suggest an infective aetiology, an important differential diagnosis to exclude in PSS is septic arthritis. Regional radionuclide bone scan has been found to be useful in this regard. [7] Three-phase radionuclide bone scan is a useful procedure for the early diagnosis and treatment of PSS. [8] Occasional diagnostic challenges may arise even with this imaging modality. For instance, x-ray examination has been utilized to confirm that the increased uptake around the knee on radionuclide bone scan in a patient with a primary malignancy in the lungs was due to concomitant PSS and not secondaries, in a reported case. [9]

PSS is rare; not all soft tissue calcifications in the region of the medial femoral condyle on x-ray examinations are symptomatic; and if symptomatic these may not necessarily be located within the MCL. This phrase is reminiscent of the proverbial “not all that glitters is gold”. And if indeed it “glitters” (calcification present), and appears to look like “gold” (pain and limitation of movement present), then one might as well cross-check with an MRI examination to be on the safe side.

CONCLUSION

Two cases of PSS have been described. We advocate the additional evaluation of all suspected cases of PSS with MRI for adequate delineation of the anatomy of the MCL, and confirmation of the diagnosis.

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