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Patellar Tendon-Lateral Femoral Condyle Friction Syndrome: About 5 Cases

H. Taoufik[1*], F. Z. Janan[1], H. El Mouden[1], H. Tabakh[1], N. Touil[1], O. Kacimi[1], N. Chikhaoui[1]

[1]Emergency Radiology Department, UHC IBN ROCHD of Casablanca, Morocco

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***Corresponding author:** H. Taoufik
Emergency Radiology Department, UHC IBN ROCHD of Casablanca, Morocco

Abstract **Original Research Article**

Objective: The objective is to illustrate the MR imaging findings occurring in the posterior inferolateral patellar tendon and the lateral femoral condyle in patients experiencing chronic anterior and/or lateral knee pain. ***Material and methods***: A retrospective review of the MR images in (patients who presented with chronic anterior or lateral knee pain. In all patients, postcontrast images were available. ***Results***: Sagittal and axial imaging planes best demonstrated the patellar tendon and its relationship with the lateral femoral condyle. In all the patients, there was obliteration of the fat planes and abnormal signal intensity in the lateral soft tissues of the inferior patellofemoral joint. Enhancement after administration of gadolinium was noted in all cases in which contrast was administered. One patient showed cystic changes in the soft tissues adjacent to the lateral femoral condyle in addition to fat plane obliteration. Abnormal patellar alignment was noted in one patient. Patellar tendon pathology was seen in one patient. ***Conclusion:*** When assessing anterior knee symptoms, MR imaging facilitates the identification of changes associated with patellar tendon-lateral femoral condyle friction syndrome, which should be differentiated from other causes of anterior or lateral knee pain.

Keywords: lateral knee pain, soft tissues, fat planes, MR images.

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INTRODUCTION

Patellar pain and anterior knee pain rank among the prevailing issues frequently encountered in both primary care and orthopedic clinics. The patellar tendon-lateral femoral condyle friction syndrome in the differential diagnosis of patients with anterior knee pain [1].

Limited information exists in the radiologic literature regarding patients diagnosed with patellar tendon-lateral femoral condyle friction syndrome.

MR imaging can reliably identify this condition, revealing soft tissue edema and inflammatory infiltration in the infrapatellar fat body in the anterolateral aspect of the patellofemoral joint [2].

This study aims to delineate the MR imaging findings of a specific entity characterized by alterations occurring between the patellar tendon and the lateral femoral condyle [3].

Enhanced comprehension of this pathology contributes to more effective management strategies.

MATERIAL AND METHODS

Retrospective review of MR images in 5 patients at the Radiology Emergency Department of CHU Ibn Roch in Casablanca between November 2020 and November 2022.

All patients presented chronic anterior knee pain without a history of trauma. MR images were obtained with a 0,5T or 1,5T unit, with dedicated knee coils.

All examinations were performed with a 1.5 Tesla MRI (Siemens) and a dedicated HR quadrature knee transmitting and receiving antenna, to enable parallel acquisitions. The knee was placed in extension.

The sequences performed are:

1. Proton density with fat saturation (PD FS), axial from the lower third of the quadricipital tendon to the anterior tibial tuberosity perpendicular to the anterior cortex of the femur, sagittal perpendicular to the lateral border of the trochlea, and coronal parallel to the condylar plane
2. T1 sequence in the sagittal plane.

FINDINGS

In our study, the average age was 36 years, with extremes ranging from 26 to 50 years. There was a male predominance, with three men and one woman, giving a male/female sex ratio of 3. Regular exercise was found in 3 cases

These patients had a chronic symptomatology evolving for more than three months, essentially consisting of chronic peripatellar gonalgia on exertion, more marked anterolaterally. Only one patient reported other functional signs such as pseudo-jamming and instability.

Each patient underwent a clinical examination of the knee, and in particular the patellofemoral compartment, which revealed anterior pain exacerbated by hyperextension and tenderness over the lower pole of the patella.

All patients showed a focal area of abnormal signal intensity in the infrapatellar fat body in the anterolateral aspect of the patellofemoral joint. Patients were excluded if a MR imaging diagnosis of meniscal tear/ligamentous injury that might result in anterolateral knee pain was made.

Data recorded from MR imaging studies included:

1. Patellofemoral alignment.
   Evaluation of articular cartilage in the lateral facet of the patella.
2. Lateral patellar subluxation.
3. Morphology of the patellar surface: Wiberg classification).
4. Patella alta.
5. Morphology and signal intensity of patellar tendon (tendinosis / partial tear).

1. Focal area of abnormal signal intensity in the infrapatellar fat body in the anterolateral aspect of the patellofemoral joint:

All patients presented a focal area of abnormal signal intensity in the infrapatellar aspect of the patellofemoral joint, with low signal intensity on T1-weighted images and high signal intensity on fat-suppressed proton density.

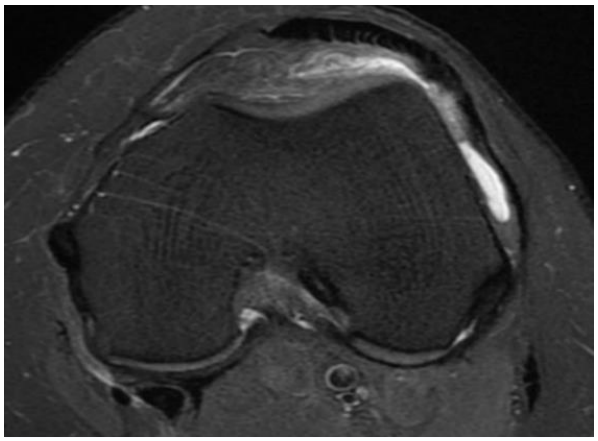

Figure 1: DP axial sequence showing an elevated signal in the infrapatellar fat pad

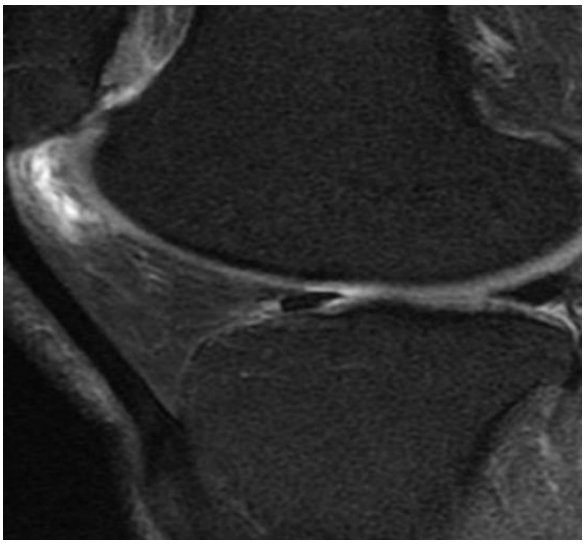

Figure 2: Sagittal PD sequence showing an elevated signal in the infrapatellar fat pad

2. Patellofemoral alignment abnormalities:

Patella alta was present in 1 knee (Fig 3).

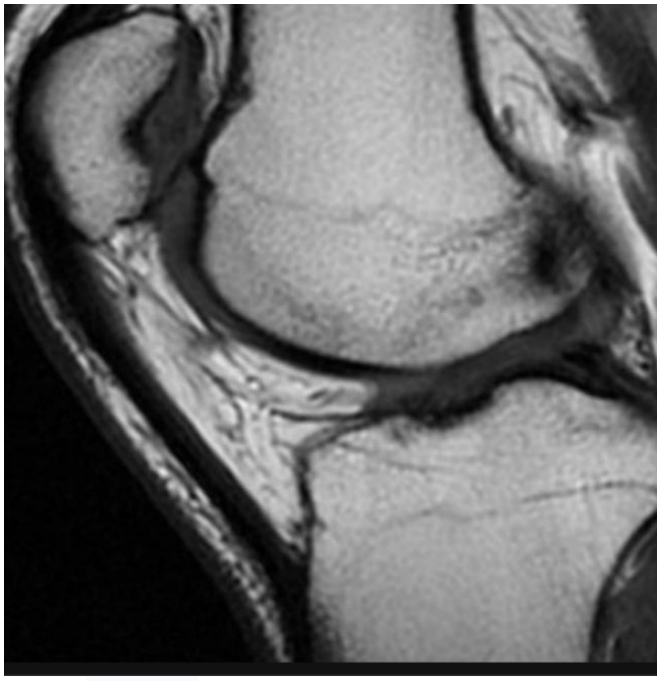

Figure 3: Sagittal T1 sequence: Patella alta

3. Articular cartilage in the lateral facet of the patella:

Cartilage abnormalities were seen in the lateral facet of the patella in 1 knees.

4. Patellar tendon:

Thickening of the patellar tendon and areas of intermediate signal intensity (collagen degeneration) was seen in 1 knees (Fig 4). No cases of partial tear were demonstrated.

Fig 4: Sagittal PD FS sequence showing thickening of the patellar tendon

DISCUSSION

I. Etiology-pathogenesis

The frontal region of the knee consists of a complex interplay of components—ligaments, muscles, aponeuroses, and the joint capsule—that converge to envelop the centrally positioned patella, establishing an intricate stabilization system incorporating both passive and active elements. Passive soft tissue stabilizers encompass the patellar tendon, medial and lateral patellofemoral ligaments, medial and lateral meniscopatellar ligaments, along with segments of the fascia lata. Meanwhile, the active soft tissue stabilizers involve the quadriceps muscles [4]

Patellar tendon-lateral femoral condyle friction syndrome, also recognized as Hoffa fat pad impingement syndrome, emerges as a prevalent source of anterior knee pain among active individuals. The condition is believed to stem from patellar maltracking or an imbalance in the forces exerted by the medial and lateral vastus muscles,

resulting in impingement of the superolateral aspect of the Hoffa fat pad between the inferior patella and the lateral femoral condyle [5].

II. Clinical presentation

Patients manifest with anterior knee pain intensified by hyperextension, accompanied by localized tenderness at the inferior pole of the patella. The thickening of the fat pad may pose challenges in palpating the patella [6].

In our series all patients manifested an anterolateral knee pain.

III. Treatment:

The treatment is usually conservative. It may include Rehabilitation exercises, Supportive braces, Taping [7].

IV. MR findings

In the literature, the MRI signs suggestive of this syndrome are:

A focal area of elevated T2/PD FS signal (indicative of edema) is observed at the anterolateral aspect of the patellofemoral joint, specifically within the super lateral segment of the infrapatellar fat pad.

Occasionally, a cystic lesion may be identified between the lateral femoral condyle and the lateral retinaculum.

Associated findings include lateral patellar subluxation, patella alta and Wiberg type III patella shape.

Imbalance in the stabilizing structures of the patellofemoral joint, patellar tendinosis and cartilage abnormalities in the lateral patellar facet, may be seen.

In our series:

- All the patients had a focal area of elevated T2/PD FS signal the anterolateral aspect of the patellofemoral joint, specifically within the super lateral segment of the infrapatellar fat pad.
- One patient had a cystic lesion between the lateral femoral condyle and the lateral retinaculum.
- One patient had a patella alta.
- One patient had a patellar tendinosis.

V. Prognosis:

The prognosis is frequently favorable, particularly with conservative treatment. This partly explains why this condition has been largely overlooked in the imaging literature [7].

CONCLUSION

It's an uncommon syndrome, but one to keep in mind when faced with chronic anterior knee pain. This syndrome is clinically under-diagnosed, hence the importance of imagery, if prescribed. MR imaging plays a crucial role in assessing patients with patellofemoral arthralgia.

The MRI findings are an increased signal intensity at the anterolateral aspect of the infrapatellar fat pad on fat-suppressed proton-density or T2-weighted images A patellar alignment abnormality is often associated [7].

REFERENCES

1. Pharis, H., Kong, A., Robbins, M., Waranch, C., & Wissman, R. (2022). Friction syndromes of the knee. *The Journal of Knee Surgery*, *35*(05), 491-497. DOI: 10.1055/s-0042-1743222
2. Dixon, A., Abdeldjalil, B., & Jones, J. Patellar tendon-lateral femoral condyle friction syndrome. Reference article, Radiopaedia.org (Accessed on 06 Jan 2024).
3. Kettunen, J. A., Harilainen, A., & Sandelin, J. (2007). Arthroscopie du genou et exercice versus exercice uniquement pour le syndrome de douleur fémoro-patellaire chronique : un essai contrôlé randomisé. *BMC Med*, *5*(1), 38-38.
4. Jensen, R., Hystad, T., & Baerheim, A. (2005). Knee function and pain related to psychological variables in patients with long-term patellofemoral pain syndrome. *Journal of Orthopaedic & Sports Physical Therapy*, *35*(9), 594-600.
5. Rathleff, M. S., Roos, E. M., Olesen, J. L., Rasmussen, S., & Arendt-Nielsen, L. (2013). Lower mechanical pressure pain thresholds in female adolescents with patellofemoral pain syndrome. *journal of orthopaedic & sports physical therapy*, *43*(6), 414-421.
6. Gulati, A., McElrath, C., Wadhwa, V., Shah, J. P., & Chhabra, A. (2018). Current clinical, radiological and treatment perspectives of patellofemoral pain syndrome. *The British journal of radiology*, *91*(1086), 20170456.
7. Lun, V. M., Wiley, J. P., Meeuwisse, W. H., & Yanagawa, T. L. Efficacité du corset rotulien pour le traitement du syndrome douloureux fémoro-patellaire. *Clin J Sport Med*.