

Isolated congenital absence of posterior cruciate ligament? A case report

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Abstract A rare case of a 28-year-old Asiatic male with the isolated absence of a posterior cruciate ligament is reported. Clinical features, diagnostic steps, therapeutic strategies and follow-up are described. A review of the literature is also presented.

Keywords Congenital ligament absence · Posterior cruciate ligament · Knee instability

Introduction

The absence of the posterior cruciate ligament (PCL) is a rare congenital malformation that may be responsible for instability of the knee joint. It is usually associated with other congenital abnormalities of the lower limb such as anterior cruciate ligament (ACL) agenesis [1–3], absence of one or both menisci [3] and absence or dysplasia of the patella [4].

Only a few cases of agenesis of the cruciate ligaments of the knee are reported in the literature, and they concern the ACL [2, 5–10]. Bilateral ACL absence is reported in three papers [5–7]. We report a case of isolated absence of the PCL, not associated with other congenital abnormalities of the knee.

Case report

A 28-year-old Asian male was examined for pain in the right knee joint after jogging. No injuries, sprains or contusions of the right knee were reported in the history.

The patient had never done any contact sports or practised any sport at a high level. No skeletal congenital abnormalities in the family were reported, nor did the subject mention abnormalities during pregnancy, childbirth or somato-psychic development.

The pain reported in the right knee was not localised, but it was a little more intense in the patellar zone, and decreased with rest or local ice. During clinical examination, the following signs were noted: a minimal genu varum (5°), no joint effusion (no patellar tap), complete range of motion in flexion, 5° of hyperextension and no meniscal signs. A light tenderness during pressure on the patella and intense tenderness on distal bicipital insertion were also present. The anterior and varus-valgus stress tests were negative, while there was considerable

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posterior instability (positive posterior drawer sign 3+).

Clinical examination of the left knee did not reveal any abnormality, nor were there any signs of articular instability. On plain radiographs in standing position a 5° varus was confirmed and no bone alterations were detected.

On magnetic resonance imaging (MRI) of the right knee a normal image of the epiphysial bone and articular cartilage, the menisci, collateral ligaments and the ACL was observed, but the PCL was not detected. The PCL was not visible in any of the performed slices and there were no images of inveterate lesion of the PCL, such as fragmented ligaments or bands with abnormal orientation or insertional surface irregularity (Figs. 1–3).

To reduce the pain, rest, the use of crutches with partial weightbearing for two weeks, systemic anti-inflammatory drugs and acupuncture were prescribed. After 2 weeks the patient gradually restarted normal life, with only sporadic pain in the right knee. Then a conservative treatment was performed: initially the femoral quadriceps was reinforced by means of isometric and isotonic exercises, while avoiding overuse of the patello-femoral joint. After 4 weeks exercises for flexor muscles were introduced. After 10 weeks the patient restarted his usual sports activity.

After physiotherapy, we proposed surgical treatment with PCL reconstruction to the patient.

The patient, in view of the absence of subjective posterior instability and remission of the symptoms, refused surgery.



Fig. 1 MRI of the right knee (sagittal plane): absence of the PCL



Fig. 2 MRI of the right knee (coronal plane): absence of the PCL



Fig. 3 MRI of the right knee (coronal plane): absence of the PCL and insertional surface irregularity

At 24-month follow-up, the patient did not report any symptoms: no pain or articular instability during his daily work and sports activity (jogging less than 20 km/week).

Discussion

The isolated absence of the PCL is a rare congenital abnormality, not described in the literature until now. This congenital abnormality is generally described in association with other abnormalities such as: absence of the ACL [1–3], absence of one or both menisci [3] or absence or dysplasia of the patella [4].

This condition may also be associated with dysmetria of the lower limb [2]. Congenital absence of the PCL may be diagnosed at different ages and in different situations. Usually patients go to the orthopaedic surgeon for an aspecific knee pain or subjective sensation of knee instability during their daily activities or while playing sports. In other situations agenesis of the PCL is an incidental finding. In any case there is no history of trauma. The significant posterior instability of the knee joint, MR images and the lack of trauma indicated a congenital absence of the PCL in the case described in this paper.

Isolated agenesis is clinically and biomechanically similar to the isolated lesion of the PCL and may, therefore, be treated in the same manner. There is no consensus on treatment of PCL lesions in the literature: some authors propose a conservative treatment [1, 11], while others propose surgical treatment with PCL reconstruction [12].

The absence of the PCL results in biomechanic alterations of the knee, such as an anterior subluxation of the medial femoral condyle, posterior tibial translation and an increase of the patellar flexion. The posterior instability may lead to meniscal lesions, chondral lesions and finally osteoarthritis, especially of the medial section [13–17].

We can, therefore, conclude that the therapeutic approach to this pathology depends on careful analysis of various factors (the possible presence of other associated lesions, age of the subject, the symptoms and the type of activity performed), but it is important to verify the efficacy of the conservative treatment before programming a surgical approach.

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