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RADIATED SUPRAPATELLAR PAIN IN TEENAGE ATHLETE:A CASE STUDY

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ABSTRACT

In the patient population of active adolescents, parapatellar discomfort is a prevalent complaint. These parapatellar symptoms are primarily brought on by patellofemoral pain syndrome, Osgood-Schlatter disease, Sinding-hen-lohansson syndrome, patellar tendinitis, and other stress failure diseases. Not all instances of knee pain are caused by pathology. In this case study, a male athlete aged 8 with hip pathology is the source of referred knee discomfort. In every situation, care must be made to consider all potential main and referral pain sources

Keyword:. Adolescent, knee pain, Perthes disease

INTRODUCTION

Teenager, knee pain, and Perthes disease are important terms.A grade-school athlete, 15-year-old male who was also being evaluated in the clinic was accompanied by his mother. The patient and his mother, who were both skilled historians, offered the following opinion during the physical therapy evaluation. Three months before to the appointment, a fall that directly hit the patella was the main cause of the right knee pain that was being complained about. Pain was not significant at the scene of the accident, and the patient went on to engage in typical recreational sporting activities and daily activities with just minimal discomfort. After The patient's knee pain gradually got worse, and he or she started to hobble lightly. The patient showed up for the first physical therapy evaluation for these reasons. The right knee's discomfort was unrelated to any specific exercise. The patient denied locking or catching sensations, stairs had no effect on the pain, and extended sitting made it worse. Between the original fall on the knee and the evaluation, there was no apparent swelling. Prolonged weight bearing tended to make pain worse when it was present. Additionally, applying superficial moist heat to the knee did not help to relieve the pain, and the patient had not yet tried applying ice. There was no morning and the pain did not get worse.around two months, the unpredictable knee pain led to a request for an orthopaedic consultation. X-rays of the knee revealed no bone defects or fractures.

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EVALUATION

The following information was discovered during a physical examination of the knee: Swelling By measuring the circumference, no periarticular edema was seen. Intra-articular edema was not seen after completing the patellar tap and fluctuation tests and milking possible fluid from the suprapatellar pouch. Gait and Posture Analysis Standing posture analysis revealed listing to the right. Gait examination on the injured right side showed

compensatory gluteus medius gait. The right side of the patient's hip flexion was lessened, and the patient tended to spend less time on the right side during the stance phase.

Motion Range The bilateral knees' active range of motion was symmetrical, complete, and pain-free. Throughout the range of motion, no audible or perceptible patellofemoral crepitus was evident. Be flexible Hamstrings were tight on both sides, and with the hips flexed to 90, active knee extension was 35" from neutral on the right side and 30" from neutral on the left. Active dorsiflexion was 0–5 inches on both calves without preserving subtalar neutral.

Palpation The patellar tendon, inferior or superior pole of the patella, pes anserinus insertion, tibia 1 tubercle, and quadriceps tendon were all free of any discomfort. There was no plica to be felt. There was no discomfort felt while palpating the lateral patellar facet, however there was some discomfort felt when palpating the medial facet.No medial retinacular discomfort was seen. Patellofemoral Evaluation Bilaterally, patellar mobility was normal. The patella could not be subluxed more than one-third of the patellar width bilaterally with the knees flexed to 45". In conjunction with active knee flexion and extension, patellar tracking was normal. The patella was neither tilted or rotated asymmetrically in its resting position. The Q angle was bilaterally symmetrical and was within typical bounds. Muscle Evaluation There was no need for an isokinetic test. A manual quadriceps muscle test demonstrated excellent strength on the left side that was not involved and good strength on the right side that was. Strong hamstrings on either side. Unique Tests Varus/valgus stress at 0 and 30" of flexion, Lachman's test, and anterior and posterior drawer tests were used to evaluate the laxity of the knee bilaterally. The medial/lateral collateral ligaments and the anterior/posterior cruciate ligaments did not exhibit any asymmetry or aberrant laxity. Palpation revealed no joint line discomfort, and rotational signals ruled out any meniscal involvement that could have been present. Girth Calculation At 3, 6, and 8 in proximal to the joint line, the circumference of the affected right quadriceps was roughly %-in less than the noninvolved left quadriceps. After completing the aforementioned test, there were no conclusive clinical findings that pointed to a major knee issue. The various causes of referred pain to the knee were then investigated, including the proximal and distal joints. An examination of the non-weight-bearing lower extremities while lying down indicated bilaterally mild rearfoot varus. The first ray's mobility was adequate, and the rearfoot to forefoot connection was satisfactory.

At the retrocalcaneal region or the plantar side of the foot, no calluses or blisters were discovered. The non-involved left hip's femoral anteversion was unremarkable. However, the right hip's passive internal rotation was only able to move about two-thirds of the way normally. A third of the standard range lessened passive external rotation was used. The hip was then the focus of attention. Right hip flexor strength was good, whereas left hip flexor strength was good. Abductor strength in the sidelying position was good on the left and fair on the right. This movement was followed with hip and knee discomfort, and the strength of the internal and external rotators on the left side was good compared to a medium grade in the available range.Provocative testing was successful since the patient could not endure manual overpressure on his hip when he was supine and was in too much discomfort to take a figure-four posture for the Patrick's test. After a subjective evaluation, it was determined that the patient had patellofemoral pain syndrome (the clinical diagnosis), with additional impressions of chondromalacia patella (based on direct observation of the retropatellar surface) or possibly osteochondritis dissecans (OCD). Normal knee X-ray results would typically rule out OCD.

The examination was finished, and the clinical impression of hip pathology as the source of referred knee pain was formed due to the lack of significant objective evidence about patellofemoral pathology. X-rays of the hip were requested, and the patient was sent to another orthopaedist (Figure). Two-thirds of the femoral head were affected by Perthes disease of the hip, according to radiographs.

DISCUSSION

Drs. T. Legg, a physician from the United States, Dr. J. Calve, and Dr. G. Perthes, a physician from Germany, initially characterized Perthes, now known as Legg-Calve-Perthes disease, between 1908 and 1910 (4). An avascular necrosis of the femoral head is the problem at hand. The condition affects around 1 in every 1,200 people (5).

As seen in this instance, males experience Perthes disease on average 4:1 more frequently than females (4,5).Children as young as 3 years old have been documented with cases, while those aged 5 to 7 had the highest

prevalence. The main symptoms of a patient with Perthes disease are discomfort and a persistent limp. The anteromedial thigh and the knees are commonly the sites of Perthes disease pain, which is typically restricted to the groin (2,4,5).

The hip's range of motion is often limited, particularly in the planes of abduction and rotation. Muscle atrophy in the thighs and buttocks is another observational result. To evaluate the level of bonv involvement, X-rays are necessary. The use of views of the opposing hip for comparison is often beneficial. Early X-ray signals, which are best observed from the side, show that the epiphysis has failed to develop. The increased loss of density and consequent enlargement of the metaphvsis are results of this lack of development. Later X-ray changes include shortening of the femoral neck and flattening of the femoral head, followed by expansion of the femoral head. A bone scan can also be used to estimate the percentage of the femoral head that is affected by comparing the affected hip's reduced uptake to the contralateral hip. There is no known etiology for Perthes disease. . In 25% of the instances, trauma may be a predisposing factor; in other situations, there may be a hereditary tendency. Additionally, there is a history of recurrent synovitis, and the majority of patients have slowed bone development. Five phases make up the pathophysiology of the illness (I).

The first stage, known as P-P-Pcrosis, is when the viiscular shutdown takes place. This arterial blood supply impairment may be brought on by trauma, insufficient arterial blood flow, or positional arterial compression. Microemboli, increased intra-articular pressure, hypercoagulability and resulting thrombosis, and venous obstruction are other variables that may cause vascular injury. . Necrosis affecting the femoral epiphysis and, occasionally, the metaphysis characterizes the second stage. The necrosis stage is followed by a revascularization step. In this phase, granulation tissue replaces resorbed dead bone. It is at this point that deformity is most prone to develop because the softened iron may move anteriorly and leak heat. Secondary acetabular flattening may also happen in rare circumstances. The fourth stage entails rossification from the femoral head's perimeter toward its core. It might take up to Q years to complete this level. The final stage, modeling, has very little impact on the morphology of the included ferns.

TREATMENT

The femoral head must be contained inside the cephalothorax according to the guiding principle of I'crthesdiseiise. The femoral head can reconstruct properly by attaining and maintaining confinement (1).

With young patients, containment is frequently successfully attained with bracing, in which the hip is kept in internal rotation and abduction. Surgery is necessary if femoral head involvement is substantial since this conservative approach is suboptimal. In order to stage the condition and determine whether surgical intervention is necessary, a categorization system created by Lloyd-Roberts, Catterall, and Salanion is helpful (I).

The capital femoral epiphysis' level of participation informs the l'liis categorization system. . Less than half of the femoral head is included in Group I. Greater sequestrum fornlation and total head involvement are present in Groups I I and Ill. Patients in Group IV exhibit involvement of the whole epiphysis. Patients in groups 11, 111, and I may exhibit X-ray alterations that are associated with subpar outcomes. These X-ray modifications are considered indicators of a "head at risk." The lateral subluxation of the fenioral head from the acetabulum, speckled calcification lateral to the capital epiphysis, diffuse metaphyseal cysts, a horizontal growth plate, and a V-shaped radiolucent defect in the lateral epiphysis and adjacent metaphysis (Age's sign) are all indications that the head is at risk.

An innominate osteotomy or a varus derotational osteotomy is one type of surgical surgery. For older children in Groups 11, Ill, or I' with head-at-risk indications, surgery is typically advised. The patient in this study had an innominate osteotomy after exhibiting lateral subluxation, leg length discrepancy, and greater than 50% femoral head involvement.

CLINICAL COURSE

The patient is scheduled for an in-nominate osteotomy six months following the initial appointment to physical therapy and the subsequent initial examination by the orthopaedist. The patient was hospitalized two weeks before the scheduled operation date in order to maximize preoperative range of motion. The patient was maintained

nonweight bearing and placed in Russell's traction. In a nutshell, the innominate osteotomy included maintaining muscle bellvcontinuity while separating the iliopsoas tendon for surgical exposure. . The inferior bony piece was rotated anteriorly during an osteotomy from the sciatic notch to the anterior inferior iliac spine. In order to relieve strain on the femoral head, the posterior spike from the inferior fragment was permitted to push on the wing of the ilium. Then, a triangular wedge supported by two pins was inserted into the deficiency of the anterior ilium to harvest a bone graft from the anterior iliac crest. The patient showed symmetrical passive hip rotation three months after surgery, but had only 0-25" of abduction as opposed to 0-45" on the opposite side. . The patient then underwent a percutaneous adductor tenotomy after the two pins were taken out. Another facility's postoperative rehabilitation included increasing weight-bearing activities along with lower extremity range of motion and strengthening exercises. The patient completed the rehabilitation process without incident. The hip's X-rays are clear two years following surgery, and the range of motion is complete and symmetrical with the other hip. The patient complains of sporadic hip discomfort that does not interfere with daily activities.

CONCLUSION

Particularly in today's active youth, knee issues are frequently found in sports-related injuries (3).Even while many knee overuse injuries are not serious, they all require a careful examination. In these situations, the physical therapist, who is frequently an orthopaedic or sports physical therapist, must be able to distinguish between actual knee disease and other possible origins of pain.

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