Knee Pain in a Woman Without Injury

Why would pain resume after arthroscopy?

By Sarah Asman, PA-S, Steven A. Greer, MD, Judith Stallings, PA-C

A 57-year-old woman presented to a sports medicine clinic in October 2008 complaining of right hip pain. Upon further questioning, the patient reported that she had longstanding right leg pain located primarily in her right knee. She experienced no relief of symptoms after multiple anti-inflammatory medications, nor did she experience relief with gabapentin (Neurontin, prescribed by her neurologist for radicular back pain).

History
The patient's past medical history included hypertension, gout, hypothyroidism, radicular back pain and rheumatoid arthritis. On investigation, the reported back pain turned out to be lateral thigh pain, diagnosed as radiculopathy.
The patient's past surgical history included gallbladder surgery.
Medications at the time of this visit included allopurinol, diltiazem, colchicine, indomethacin, levothyroxine, hydrochlorothiazide, potassium chloride and tramadol. She reported no known drug allergies.
Her family history was significant for heart disease, hypertension, stroke, arthritis and diabetes. In addition, her psychosocial history included approximately 20 years of cigarette smoking. She stated that she did not drink alcohol.

Examination
The physical examination revealed intact skin with no lesions, rashes or other abrasions on the lower extremities. The patient's hips moved freely bilaterally with no pain or crepitus and no limitation on internal or external rotation, forward flexion or abduction. Examination of the right knee demonstrated significant crepitus and pain with range of motion. Range of motion was approximately 5 degrees to 90 degrees in the right knee. Notable effusion was present in the right knee, which was mildly tender to palpation about the medial and lateral joint lines. Mild tenderness was also evident on the patella. The patient was stable to varus and valgus stress throughout range of motion. The neurovascular exam showed that sensation was distally intact with normal sensation to light touch and normal motor exam findings.

Standing anteroposterior x-rays of both knees demonstrated significant degenerative joint disease in both knees (Figure 1). The lateral view of the right knee showed an apparent Baker's cyst filled with chondrocalcinosis (Figure 2). Radiologic assessment was consistent with loose bodies in the right knee. Aside from this, the x-rays revealed moderate to severe degenerative joint disease consistent with rheumatoid arthritis.
The orthopedic surgeon recommended arthroscopic intervention to remove loose bodies, and the patient agreed to the procedure. The
medical team discussed the risks and benefits of arthroscopy with the patient in detail. The procedure was performed in December 2008. During the patient's post-surgical visit, she reported that her right knee felt stiff but that she was not experiencing any pain. The patient also reported no feelings of instability and overall had recovered well. The orthopedic surgeon recommended that she return to her normal activities and follow up as needed.

**Follow-Up**

The patient returned in October 2009 for assessment of recurrent knee pain. She stated that she was experiencing what she considered knee instability. The patient did not want to try another NSAID because she didn't like the systemic effects of this drug class.

The physical examination at this time did not reveal any effusion or ecchymosis of the affected knee. However, the patient exhibited tenderness to palpation along the medial joint line and the anterior and posterior stress.

Anteroposterior and lateral x-rays of both knees were performed in the office and compared to the x-rays from December 2008. The images revealed chondrocalcinosis mostly in the right posterior knee, as well as degenerative joint changes in the patellofemoral joint and medial joints. The medial side of the knee displayed significant joint space narrowing.

We presented various treatment options for pain, and she chose injection with 1 cc triamcinolone 40 mg, 3 cc bupivacaine 0.5% and 3 cc lidocaine 2%. We instructed the patient to return to the clinic for evaluation in 3 months.

In January 2010, she presented for follow-up and reported a recurrence of knee pain. We provided information about total knee arthroplasty, and she opted to delay it. The previous steroid injection provided significant relief and she requested another one. We provided the same dosage and combination.

The patient presented 9 months later in September 2010 stating that her knee pain had returned. She requested another steroid injection. On physical exam, the patient had full bilateral range of motion in the hip, knee and ankle. Her right knee was globally tender. Her knee was stable to varus and valgus stress. Anteroposterior and lateral x-rays performed in the office showed worsening osteochondromatosis and significant degenerative joint disease (Figures 3 and 4). The patient requested another knee injection, and we again provided the same dosage and drug combination. We asked her to follow up in another 3 months.

**Discussion**

Synovial osteochondromatosis is a rare, mostly benign metaplastic disease of the synovium in which synovial fibroblasts differentiate into nodules of cartilage and bone.1 The joints most commonly affected are the knee, hip and elbow.1 Some reports of osteochondromatosis in the temporomandibular joint, the vertebral facet joints and the subacromial and retrocalcaneal bursae have been reported.2,3 The etiology of the disease is unknown, but some experts believe that the disease is reactive, possibly caused by a previous history of trauma or...
infection.2 Primary disease is more rare than secondary disease, with the former thought to be more a more aggressive form of chondromatosis.4 Patients usually present with pain, stiffness, instability, locking and decreased range of motion.5 The disease is twice as common in men as in women, with the greatest incidence being in the third through fifth decades of life.1 Due to the inflammatory nature of rheumatoid arthritis, it is possible that patients with this disease could be predisposed to other inflammatory conditions of the synovium. Taking into account the theory that synovial chondromatosis is a reactive disease, the presence of inflammation in the synovial lining of the joint could precipitate this reactive disease, making patients with RA more susceptible to synovial osteochondromatosis. Synovial chondromatosis is classified in three stages.5 Early stage disease is characterized by acute synovial disease without loose bodies.5 The transitional stage features active synovial disease with the presence of loose bodies. In late stage disease, loose bodies are present without synovial disease.5 Staging is based on the findings of plain films. Occasionally, ossification can be seen on MRI.5 However, an MRI may not display the stalked lumps and loose bodies in the joint.2 Unfortunately, radiography can sometimes lag behind the development of pathologic disease, so the diagnosis is often not made until the later stages.5 Without definitive physical exam findings or with unrelenting symptoms, a diagnostic knee arthroscopy can help definitively rule in or rule out synovial chondromatosis.2 Knee arthroscopy can also aid in diagnosing other causes of knee pain, such as degenerative joint disease, osteochondritis dessicans, neuropathic arthropathy, rheumatoid arthritis and tuberculosis arthritis.2 Histologic analysis of the synovial fluid distinguishes chondromatosis from these other diseases, most commonly revealing cartilaginous and osseous pockets within a fibrous-tissue envelope that demonstrates true cartilaginous metaplasia.2,5 Treatment for synovial chondromatosis is still being debated. The general consensus is that surgical intervention with synovectomy is most effective.2,6 Small loose bodies can be removed by arthroscopic synovectomy, while larger bodies must be removed via open synovectomy.1 Partial and complete synovectomies can help control disease, but these procedures are not always curative.6 In the case of our patient, knee arthroscopy with removal of foreign bodies provided symptomatic relief for several months. However, she returned with worsening knee pain and worsening findings with more loose bodies present. We offered steroid injections to achieve pain relief. In general, steroid injections are used as adjuvant treatment to rest, ice, nonsteroidal anti inflammatory drugs and physical therapy for inflammatory conditions.7 The mechanisms of action of intra-articular steroid injections are multiple, the most basic being reduction of erythema and edema.8 The biologic basis behind the reduction of pain and swelling includes less recruiting of leukocytes by the body to the injured site, increased viscosity of the synovial fluid, stabilization of cellular lysosomal membranes, a transient decrease in synovial fluid
compartments, alterations in synovial permeability, and alterations in hyaluronic acid synthesis. These mechanisms decrease pain in the joint nonspecifically, meaning that relief can be provided for numerous joint ailments. Indications for steroid joint injections include effusions of unknown origin, crystalloid arthropathies, synovitis, inflammatory arthritis and advanced osteoarthritis. Although no indication for steroid joint injections for synovial chondromatosis has been formally documented, our patient seemed to benefit from its therapeutic properties. Further studies may be needed to investigate the use of steroid joint injections in patients with synovial chondromatosis.

**Current Status**

This patient continues to receive steroid injections every 4 to 6 months and does not wish to undergo total knee replacement. With the help of the injections, she remains relatively pain-free with no functional deficits.

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