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Treatment of Knee Synovitis from Psoriatic Arthritis with Platelet Rich Plasma Injection

Case Reports and Case Series

Treatment of Knee Synovitis from Psoriatic Arthritis with Platelet Rich Plasma Injection

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Psoriatic arthritis has been known to cause many inflammatory clinical features, including synovitis. In the past, synovitis has been primarily treated with NSAIDs, corticosteroid injections, and synovectomy when needed. This report outlines a 49-year-old female with synovitis caused by psoriatic arthritis who did not respond to conventional treatment options and was apprehensive to surgery. She was offered a platelet rich plasma (PRP) injection as alternative therapy to a synovectomy. This case explores the use of PRP injections as a potential treatment modality for patients with synovitis caused by psoriatic arthritis. This patient was able to show improvement in her symptoms after the use of the platelet rich plasma injection.

INTRODUCTION

Psoriatic arthritis is an inflammatory disease of the musculoskeletal system.^{1,2} This disease has various clinical features affecting the skin, joints, nails, and other tissues in the body.¹ One of the key features of psoriatic arthritis is synovial membrane inflammation, or synovitis, due to an increase in the immune cell infiltration within the synovial fluid, resulting in inflammation and bone erosion.¹ This case shows a potential new way to combat the synovitis caused by psoriatic arthritis using a single platelet rich plasma (PRP) injection.

CASE REPORT

A 49-year-old female patient with a history of psoriatic arthritis was referred to our primary care sports medicine clinic with left knee pain and swelling associated with recent low grade subjective fevers and chills. The pain was atraumatic in origin and started about two weeks prior without inciting event. She reported the pain as aching, dull, and sharp and gave it an 8/10 on the pain scale. The pain was constant and was aggravated by walking, climbing stairs, standing, and bending. She denied mechanical symptoms, prior uveitis, dactylitis, or inflammatory bowel disease. She had no prior surgical history to this knee. An orthopedic surgeon in our department gave her a corticosteroid injection and ordered an MRI. She then returned to her rheumatologist who unsuccessfully attempted knee aspiration, prescribed indomethacin 75mg, as well as prednisone 15mg for 5 days if not improved with NSAIDs and

arranged for an ultrasound guided injection with our office. At the time of these visits, the patient was also taking apremilast (Otezla) 30 mg twice daily, and cholecalciferol 1,000 units once daily.

Historically in 2015, she was diagnosed with psoriatic arthritis by her current rheumatologist after having asymmetrical atraumatic migratory arthritis of the knee, hand, and shoulder along with new onset psoriasis-like rash. She had no history of enthesitis, dactylitis, inflammatory bowel disease, or positive family history of rheumatologic disease at that time. On physical exam then, she had tenderness over the MCPs and PIPs, but no nail dystrophy was noted. She had effusion of the knee and range of motion restrictions of her shoulder with tenderness in the subacromial bursal region. Knee aspiration in 2015 showed an inflammatory elevated cell count in the absence of crystals or bacteria. She had an elevated ESR and CRP on blood work along with a negative rheumatologic lab work (Table 1). She was treated with methotrexate and then subsequently Enbrel, prior to starting Otezla which was noted to be most effective at controlling her joint pain and psoriatic rash.

On physical exam her left knee had range of motion from +5 of extension to +100 degrees of flexion. 2+ effusion was noted, and the knee was mildly warm and boggy with no erythema. There was medial joint line tenderness. Special testing showed normal stability with: negative medial and lateral McMurray testing, negative varus and valgus stress testing, negative Lachman test, negative anterior and posterior drawer, pivot shift, and patellar apprehension tests. The patient's knee was aspirated under ultrasound guidance with 30 cc's of cloudy fluid obtained.

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Table 1. Initial Rheumatologic Lab Work-Up 2015

Marker	Lab Result
Lyme AB	Negative
ANA	Negative
C4 complement	34 (wnl)
C3 complement	142 (wnl)
SSA/SSB	Negative
CCP AB IgG	<16 (wnl)
Anti-dsDNA	1, Negative
RF	Negative
CRP	1.45 (High)
Sed Rate	36 (High)

**Figure 1. X-ray of Bilateral Knees**

X-ray of the left knee showed no acute fractures or malalignment, no osseous lesions, and preserved joint spaces without signs of degenerative change (Figure 1). An MRI of the left knee without contrast was performed and showed chondrosis along the lateral patellar facet, small full thickness cartilage fissures along the lateral tibial plateau, grade two strain of the popliteus muscle, and large joint effusion (Figure 2). The MRI report did not record synovial membrane thickness. Fluid analysis revealed no bacterial growth and an elevated cell count of 34,000 with 94% neutrophils. Crystal analysis was negative, and glucose was normal. ESR and CRP blood tests were elevated to >100 and 1.08 respectively.

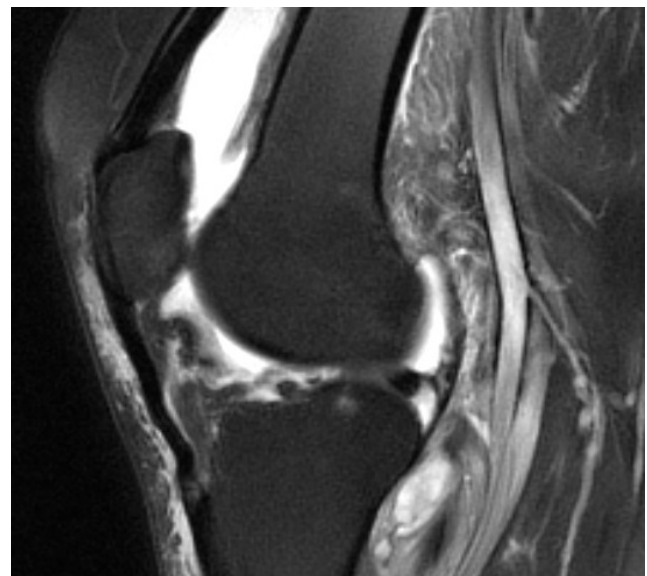
These abnormal lab findings with elevated inflammatory markers, MRI with large effusion, and inflammatory-based synovial shift, along with lack of response to medications, are not typical of an osteoarthritis flare. Since the presentation of unilateral knee effusion was identical to that in the past, rheumatology decided not to send for additional lab work again ruling out additional causes such as Lyme, Rheumatoid Arthritis, and SLE. The patient was diagnosed with synovitis as a result of her psoriatic arthritis.

Initial treatment was with oral NSAIDs and subsequent corticosteroid injection with no relief. She was then prescribed oral prednisone 15mg daily by her rheumatologist with no improvement. After three more weeks of pain and swelling, the patient returned to her orthopedic surgeon and was advised to get a synovectomy, but the patient was apprehensive about this next step. As a result, the patient was offered a platelet rich plasma (PRP) injection with ultrasound guidance as an alternative conservative treatment. She returned to the office where 10 cc's of the patient's blood was drawn by our phlebotomy lab and centrifuged through the Regenlab PRP processing system. 5 cc's of leukocyte poor platelet-rich plasma were obtained and injected into her left knee under ultrasound guidance using the superolateral approach. Ethyl chloride spray was used for topical anesthesia and no lidocaine was used for fear of decreasing platelet function. 20 cc's of slightly cloudy serosanguinous fluid was aspirated first. The patient tolerated the procedure well and there were no unplanned events during the procedure.

Patient was told to rest the affected knee for three weeks following the injection with no high impact exercises. She was advised to stop all NSAIDs for one week prior to the PRP injection and for three weeks afterwards. Gentle range of motion and stretching was allowed. She reported improving pain over the next three weeks. At three weeks, the patient was allowed to start biking and doing low weight lower body strengthening. She was told to ease back into her running regimen. Around 8 weeks after the procedure the patient was back to running 10 miles at a time without pain and was able to resume her gym exercise routine without restrictions.

DISCUSSION

Synovitis presents as joint swelling, pain, decreased motion, and effusion.³ Primary therapies for synovitis are NSAIDs and corticosteroid injections.⁴ Synovectomy can

**Figure 2. MRI of Left Knee**

be used to treat chronic synovitis for which these primary therapies no longer provide symptom relief. This procedure involves removing the inflamed synovium and can be performed either arthroscopically or openly.⁵ There has been minimal research exploring the use of PRP injections for synovitis symptom relief.

The patient presented to a sports medicine office following multiple failed attempts at treating her left knee synovitis that progressed from her psoriatic arthritis. PRP is an autologous blood product generated by isolating platelets from venous blood by centrifugation and has a proposed mechanism of pain reduction through anti-inflammatory properties like growth factors and cytokines.^{6,7} While PRP has been studied in psoriasis patients for chronic plaque treatment and in osteoarthritis patients, its use in psoriatic arthritis has yet to be elicited.^{8,9} There are numerous po-

tential benefits for this patient population, as it is a low-risk outpatient procedure that is generally well tolerated. However, limitations still exist regarding mixed outcomes data, the variability in different PRP processing kits, the number of treatments, and protocols for rehab after injection.^{6,10}

This case showed the positive effects that PRP therapy can have in a patient population with psoriatic arthritis or synovitis. There is mixed data on the utility of PRP, with some patients responding very well to this treatment modality. At this time, there are no reports of using PRP to treat synovitis caused by psoriatic arthritis. This patient responded very well to treatment, but more research needs to be done to solidify the exact biologic mechanism and the role these injections play as a regenerative medicine treatment modality in patients with psoriatic arthritis.



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