Acute Septic Arthritis of Knee Post Arthroscopic Partial Meniscectomy with Negative Synovial Culture

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Received: January 07, 2021; Published: February 27, 2021

Abstract

Arthroscopic knee surgery is one of the most common procedures performed in orthopedic surgeries all over the world with low risk of infection post arthroscopy less than 1%, cost effective technique with good outcomes, low complication rates and rapid recovery of function. Early diagnosis and management of septic arthritis give good prognosis with less complication sequelae especially joint erosion and destruction which lead to early osteoarthritis and arthroplasty.

Synovial aspiration with analysis and culture is the key stone for treatment in my case the difficulty was due to negative synovial culture so that I gave triple antibiotic to cover all suspected pathogen gram-negative cocci, gram-positive cocci, gram-negative rods.

Arthroscopic washout with gentamicin, debridement and synovectomy followed by irrigation drain for normal saline with gentamicin and negative pressure drain for 2-5 day will help in rapid recovery of knee. Then the patient will continue oral antibiotic for 4 weeks with follow up at the clinic. Rehabilitation and physiotherapy is important in rapid recovery with rapid return for work and life.

Keywords: Arthroscopic Knee Surgery; Rehabilitation; Physiotherapy; Arthritis

Introduction

Arthroscopic knee surgery is one of the most common procedures performed in orthopedic surgeries all over the world with low risk of infection post arthroscopy less than 1%, cost effective technique with good outcomes, low complication rates and rapid recovery of function. Arthroscopy is done for meniscus tears, anterior and posterior cruciate ligament tear or rupture, osteochondritis dissecans, intraarticular cyst or ganglion and chondral defect.

Septic arthritis of knee represents a potentially devastating post arthroscopic complication lead to joint degeneration (early osteoarthritis) with early arthroplasty. Common risk factors for that include using implants with anterior cruciate ligament graft which regard as foreign body, age above 50 years, tourniquet time more than 1 hour and history of medical disease like diabetes millets. The most common causative micro-organisms are staphylococcus aureus and coagulase staphylococci, while gram negative bacteria are rarely found.

In this case report I will write about my experience in management of septic arthritis of knee post arthroscopy, risk factors, the outcome and prognosis [1-9].

Case Presentation and Discussion

A 33-years old male young patient medically fit for surgery with no major comorbidities (No history of medical disease) underwent arthroscopic partial meniscectomy of medial meniscus for right knee on October 31, 2020. He received ceftriaxone 2 gm intravenously after skin test 30 minutes prior to skin incision as prophylactic based on the protocol followed by our hospital (Alemadi Hospital/Qatar) and guidelines available. His post-operative recovery was uneventful until 3 weeks later and he started physiotherapy 2 weeks after arthroscopy.

On November 22, 2020, he came with huge knee swelling, severe pain with restriction in movement, limping and fever (38.5) which started gradually 3 days ago. Ultrasound for the knee was done which revealed that there is marked joint effusion with internal echoes, thin internal septa, dependent debris and diffuse synovial hypertrophy which is suggestive of septic arthritis. Blood investigation was done with high result for CRP = 121, 99 MG/L, ESR = 31 MM/HR and WBCS = 5.3 10e3/ul. after that aspiration of the joint under aseptic technique with 80CC aspirate cloudy synovial fluid with debris which send for, cytology, analysis, gram stain and culture with immediate empirical antibiotic treatment ceftriaxone 1 gm every 12 hours, oral amoxicillin-clavulanic acid 1 gm every 12 hours with non-steroidal anti-inflammatory drugs like diclofenac acid with immobilization.

After 2 days the synovial fluid gram stain and culture was negative, but cytology and analysis revealed highly cellular smear showing neutrophils with pus cells which consistent with supplicative aspirate. so that I continue on same medication with frequent aspiration and CRP monitoring, good response of patient at the begging and improvement of general condition, knee swelling, fever and CRP dropped to normal. But on December 12, 2020 relapse of symptoms occurs, CRP elevated again after becoming normal and swelling become more, new ultrasound with same findings with synovial fluid aspiration for culture which was negative again and CRP become 48.

I discussed the choice of surgery with patient in details and I advised him to do that because he was refusing at the begging of his symptoms.

On December 12, 2020 the patient was admitted to our hospital for intravenous triple antibiotic treatment for 2 weeks with vancomycin 500 mg TID, gentamicin 80 mg BID and ceftriaxone 1 gm BID with monitoring for CRP, ESR, WBCs and creatinine every other day after doing diagnostic arthroscopy which revealed large amount of suppurrative synovial fluid with degeneration in articular cartilage, area of chondral defect and hypertrophied synovium (synovitis), then arthroscopic washout with normal saline and gentamicin, debidement and synovecctomy was done with application of irrigation tube for saline and gentamicin and drainage tube for 3 days.

The patient improved dramatically after that and he felt better in pain score, swelling, range of movement of knee with drop in CRP to become negative (less than 6). I discharged the patient after 2 weeks on oral antibiotic (cefixime 400 mg OD with clindamycin 300 mg BID) for 1 month with follow up at outpatient clinic.

On January 05, 2012 follow up visit, there is complete resolution for the symptoms of septic arthritis with normal CRP and ESR result and the patient return for his work. I referred the patient for rehabilitation and physiotherapy department.
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**Patient Name**

**Lab No**

**Requested on**

**issued on**

**Ref Doctor**

**LAB REPORT**

**Test Name**: BODY FLUID CYTOLOGY SYNOVIAL FLUID

**Cytology No.**: C-1210/20

**LIQUID BASED CYTOLOGY**

**NON-GYN CYTOPATHOLOGY REPORT**

**Clinical Data:**
Right knee synovial fluid aspiration was done.

**Specimen Type and Site:**
Cytology of right knee synovial fluid.

**Macroscopic Description:**
The received sample was yellow and cloudy fluid about 16 mL processed into 3 wet fixed (Pap stain), 3 air dried (Diff-Quik stain) and the remaining aspirate for liquid based cytology ThinPrep (one slide Pap stain).

**Microscopic Description:**
Slides examined revealed highly cellular smears showing neutrophils and pus cells with scattered rare reactive mesothelial cells.
No malignant cells were seen in the received and examined material.

**Cytological Diagnosis:**

**Right Knee Synovial Fluid, Cytology:**

Most Consistent with Suppurative Aspirate.

Attention: Cytological finding should be considered as laboratory screening aid toward the diagnosis and not as conclusive evidence of dysplasia or malignancy which must be confirmed by tissue examination of a biopsy. Both false negative and false positive cytological finding can occur.

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**BODY FLUID C/S**

- Culture Number: 24790
- Specimen Received: Synovial fluid
- Report: No Growth after 48 hours of incubation

---End of Report---
Marked joint effusion is seen with internal echoes, thin internal septa, dependent debris and diffuse synovial hypertrophy - suggestive of septic arthritis.
Suprapatellar plica are noted.
Diffuse periaricular soft tissue edema is seen.
No significant bursa distention seen.

Visible portions of menisci are normal.
Visible ligaments, muscles & tendons appear normal.
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Conclusion

Septic arthritis is a rare complication post arthroscopy of the knee less than 1%, early diagnosis and management of septic arthritis give good prognosis with less complications sequela especially joint erosion and destruction which lead to early osteoarthritis and arthroplasty.

Diagnostic tools depend on synovial fluids aspirate analysis and culture are the key stone in diagnosis after doing ultrasound or sometimes MRI with blood investigations specially CRP, ESR and WBCs.

In case of negative synovial culture such this case we need to cover all suspected pathogen gram-negative cocci, gram-positive cocci and gram-negative rods so that I gave him triple antibiotics therapy for 2 weeks. Arthroscopic washout with debridement with synovectomy is less invasive than arthrotomy and recovery is faster. The irrigation and drainage tube using normal saline and gentamicin from 2 to 5 days will help the patient in recovery. The patient must continue antibiotic treatment for 4 weeks and he can start physiotherapy as soon as possible.

Bibliography


Volume 12 Issue 3 March 2021
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