

Acute gouty arthritis in a patient after total knee arthroplasty

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Akute Gichtarthritis bei einem Patienten nach totalem Kniegelenkersatz

Zusammenfassung. Symptomatische Gicht in einem künstlichen Gelenk ist außerordentlich selten. Wir präsentieren einen 68-jährigen männlichen Patienten, der ein Jahr nach linkem Kniegelenkersatz durch zementierte totale Endoprothese progressive Knieschmerzen und Schwellung entwickelt hat. Die Diagnose wurde durch Kristall-Identifikation in der Gelenkflüssigkeit bestätigt. In dem Fall eines schmerzhaften und entzündeten Knies nach dem Kniegelenkersatz sollte neben der Infektionsdiagnostik spezifische Gichtanamnese gefragt werden und in der aspirierten Flüssigkeit zytologisch und unter polarisiertem Licht nach Kristalle gesucht werden.

Summary. Symptomatic gout in an artificial joint is exceptionally rare. We present a 68-year-old male patient who developed progressive knee pain and swelling one year after the cemented total arthroplasty of his left knee. The diagnosis was confirmed by crystal identification in the synovial fluid. Beside thorough workout to rule out infection in a painful and inflamed prosthetic knee, specific history of gout should be sought and fluid aspirate examined cytologically and under polarised light for crystal arthropathy.

Key words: Arthroplasty, gout, infection, revision, knee.

Introduction

Gout typically presents in middle-aged patients with pain, swelling and erythema of the great toe. When the knee joint is involved, effusion is present. The disease is often, but not always, associated with elevated serum uric acid levels. Negatively birefringent crystals of monosodium urate should be seen on microscopy of synovial fluid un-

der polarised light to confirm the diagnosis [1]. Although an acute painful prosthetic joint is usually a sign of infection which requires revision surgery, other causes of arthritis should be excluded before operative treatment. On the other hand, infection and crystal arthritis can coexist. The literature contains few reports of gout in a prosthetic knee [2, 3]. We present a case in which acute gouty arthritis was mimicking septic arthritis after total knee arthroplasty (TKA).

Case report

A 68-year-old male presented to us 11 months after TKA for osteoarthritis of his left knee performed at our institution. A cemented implant designed to allow a better range of motion (ROM) (Zimmer Flex, Warsaw, Indiana) had been implanted. The patient did well for approximately 9 months, then developed progressive pain and swelling in the left knee. For the last 5 days the pain was severe enough to prevent the patient from walking and sleeping. The patient also complained of night sweats. On physical examination the patient was febrile (38.0°C), laboratory signs of inflammation were elevated (erythrocyte sedimentation rate (ESR) 98 mm/h, norm 0–15 mm/h, C-reactive protein (CRP) 121 mg/L, norm 0–5 mg/L), and was found to have a warm swollen reddish knee with effusion and a severely reduced ROM. Radiographs of the left knee showed no signs of loosening (Fig. 1). Percutaneous aspiration of the fluid was performed. A total of 90 mL of cloudy yellowish fluid was obtained. Synovial fluid cell count was $8.75 \times 10^9/L$, and white cell differential count showed 92% of cells were polymorphonuclear cells. The gram stain was negative and the cultures of the fluid grew no organisms. Cytopathologic examination showed acute inflammation, no malignant cells, no amorphous debris of polyethylene and/or polymethylmetacrylate, and a large amount of needle-shaped negatively birefringent crystals resembling monosodium urate. Elevated levels of urate were confirmed by further blood investigations (526 $\mu\text{mol/L}$, reference 202–417 $\mu\text{mol/L}$). The aforementioned findings were believed to be consistent with acute gouty arthritis and the

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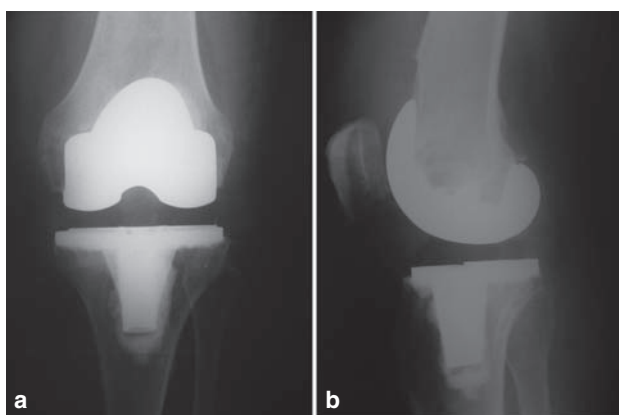


Fig. 1. Anteroposterior (a) and lateral (b) radiograph 11 months after index procedure showing no signs of loosening of the components of TKA

patient was treated conservatively with a non-steroidal anti-inflammatory drug (Arcoxia, Merck Sharp and Dohme Corp., Whitehouse Station, NJ, USA). The signs and symptoms of acute knee arthritis gradually subsided, his left knee ROM recovered, and his ESR and CRP returned to normal. Medical treatment was continued with allopurinol after one week when the patient was discharged.

Discussion

The presentation of acute gouty arthritis is similar to that of infectious arthritis. In both conditions rapid onset of pain, erythema and effusion can be found and inflammatory markers are usually elevated. In gouty arthritis the synovial fluid white cell count shows that 60–90% of cells are polymorphonuclear cells, whereas in infectious arthritis polymorphonuclear cells are >90%. An elevated serum uric acid level can suggest a diagnosis of gout but a normal level does not rule out gout [4]. The diagnosis is proven by synovial fluid analysis for gout crystals [5].

Acute gout after TKA is very rare [6]. To our knowledge, only 8 other cases were found in the English literature

(Table 1). One study reported 2 cases: one patient had undergone renal transplantation and another had a history of gout and chronic renal insufficiency [2]. Our patient also had a history of gout and mild chronic renal insufficiency, which was stable at the time of presentation. Another study also reported 2 patients with a history of gout, one of them had septic arthritis [3]. A third study reported one patient with a history of gout, in whom the diagnosis was confirmed by histological examination of the synovial tissue, obtained at arthrotomy for presumed septic arthritis [7]. Thorough diagnostic work up is important for making the right choice of treatment, as is demonstrated by our case. At 11 months after TKA, septic arthritis is likely to occur. Gout and septic arthritis can coexist, so the presence of one does not rule out the other. If we had not aspirated the joint, looked for evidence of gouty arthritis and ruled out infection, we would not have been able to establish the diagnosis of gout and would have exposed our patient to the risks of revision. Acute gouty arthropathy mimicking infection after TKA has also been reported by others [8, 9].

Conclusion

We recommend that aspirate from a swollen, warm, and erythematous joint after TKA should be routinely sent not only for cell count, gram stain, and cultures but also for crystal analysis.

Conflict of interest

The authors declare that there is no conflict of interest.

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Table 1. Reported cases of symptomatic gout after total knee arthroplasty (TKA)

Author [reference number]	Time after TKA	Number of patients	Associated infection
Freehill et al. [6]	10 years	1	yes
Archibeck et al. [2]	10 and 12; 9 years	2	no; no
Blyth and Pai [3]	4 months; 4 days	2	yes; no
Williamson et al. [7]	10 years	1	no
Berger and Weinik [8]	NA	1	no
Salin et al. [9]	NA	1	no
Current case	11 months	1	no
NA not available.			