

Case Report

Rare coexistence of gouty and septic arthritis after arthroscopic rotator cuff repair: a case report

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Abstract: Coexistence of septic arthritis and gouty arthritis is rare. In particular, no reports have described the development of both gouty and septic arthritis after arthroscopic shoulder surgery. The patient was an 83-year-old man who underwent arthroscopic rotator cuff repair. He had a history of diabetes mellitus (HbA1c: 7.4%), but not of gout, and the GFR was decreased (GFR=46). During the postoperative course fever suddenly developed and joint fluid retention was found. Uric acid crystals were detected when the joint fluid was aspirated, after which when the culture results became available sepsis due to *methicillin sensitive Staphylococcus aureus* (MSSA) was diagnosed. On the 2nd day after fever onset, lavage and debridement were performed under arthroscopy, with the subsequent course uneventful with no recurrence of the infection or gouty arthritis and no joint destruction. When uric acid crystals are found in aspirated joint fluid, gouty arthritis tends to be diagnosed, but like in the present case if infection also supervenes, joint destruction and a poor general state may result if appropriate intervention is not initiated swiftly. Accordingly, even if uric acid crystals are found, the possibility of coexistence of septic arthritis and gouty arthritis should be kept in mind.

Keywords: Gouty arthritis, septic arthritis, arthroscopic rotator cuff repair, uric acid crystals

Introduction

When acute arthritis occurs, gouty arthritis and septic arthritis need to be considered in the differential diagnosis, while the occurrence of these two conditions in combination has only rarely been reported [1, 2]. The incidence of postoperative infection after shoulder arthroscopy is extremely low at only 0.27% in recent studies [3]. In particular, no reports have described the development of both gouty and septic arthritis after arthroscopic surgical procedures in the shoulder.

We experienced a rare such case complicated by both septic and gouty arthritis after arthroscopic rotator cuff repair (ARCR), and investigated the predisposing risk factors with reference to previously reported cases. We also note the changes made to our lavage method during arthroscopic surgery based on our experience with this case.

Case report

The patient was an 83-year-old man with a history of diabetes mellitus (DM), but no history of gout. The preoperative HbA1c level was 7.8%. He had suffered from left shoulder pain for 2 years, and was diagnosed with left rotator cuff tear by MRI and ultrasonography, for which ARCR was performed. The surgical time was 58 minutes, and the sutures were irrigated with lactated Ringer's solution 3000 ml.

Postoperative course: From the day after surgery the wound pain and swelling subsided. Postoperatively the shoulder pain decreased, and blood data showed improvement of the inflammation reaction. The wound healed well, and rehabilitation proceeded uneventfully, until on the 9th postoperative day fever of over 39°C developed suddenly. Left shoulder redness, swelling, and heat sensation became apparent at the same time, and the joint fluid retention that had disappeared postoperatively reap-

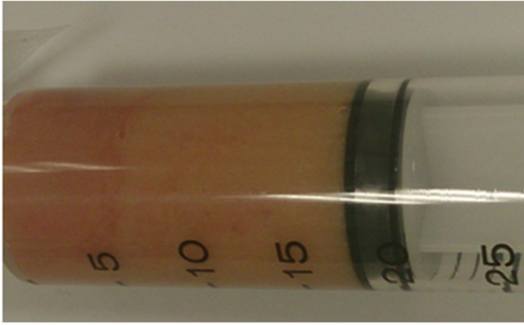


Figure 1. Aspirated joint fluid. The aspirated joint fluid was turbid and yellow-white.

peared. On the same day cultures of aspirated fluid and blood were performed. The aspirate was yellowish-white and turbid with an admixture of some blood (**Figure 1**). Culture and drug sensitivity testing of the aspirated joint fluid were performed. At this time the CRP was 17 mg/dl. Since uric acid crystals were detected the possibility of gouty arthritis was considered, but as a precaution the antibiotic Cefazolin (CEZ) was started. Since *methicillin sensitive Staphylococcus aureus (MSSA)* was identified in cultures of the aspirated joint fluid and blood, lavage and debridement were performed on the same day under arthroscopy, soon after which defervescence occurred. CEZ continued to be administered by continuous intravenous infusion until the blood findings of inflammation showed improvement. By about one month later the inflammation reaction had completely subsided, and at present half a year postoperatively inflammation is absent, and there has been no recurrence of the infection or gouty arthritis and no bone destruction.

Discussion

We experienced an extremely rare case that was complicated by both infection and uric acid crystal deposition after shoulder arthroscopy.

With regard to risk factors in this case our thinking is as follows. First, DM was thought to predispose to infection. In the present case, postoperative blood glucose control was inadequate with the blood glucose value transiently increasing to 256 mg/dl at postoperative 24 h. It has been reported that the risk of postoperative infection can be reduced by keeping the blood glucose level within the range of 80~110 mg/dl during the postoperative 48 h [4, 5]

implying that even transient hyperglycemia can be a cause of postoperative infection.

Because the symptoms of gouty arthritis and septic arthritis resemble each other the two conditions must be differentiated. Treatment of the former relies on administration of anti-inflammatory agents and control of serum uric acid levels, and that of the latter on suppression of infection by the earliest possible intervention with lavage, debridement and antibiotic administration. In particular when treatment for the latter is delayed, intractable arthritis, joint destruction or a poor general state may result. In general, when the WBC count in joint fluid is $\leq 50000/\text{mm}^3$ crystal arthritis is considered likely, and infection more likely when values are higher [6]. Since in the present case, the WBC count in joint fluid was $45000/\text{mm}^3$, and uric acid crystals were detected we were inclined to diagnose a gout attack. However, though rare, the possibility of both gouty arthritis and septic arthritis must be kept in mind and requires early treatment decision making, even after ARCR, when findings such as fever or wound swelling are noted.

Weng et al. reported a high frequency of history of gout, DM, and/or chronic kidney disease (CKD) with a GFR less than 60 ml/min in cases complicated by gout and sepsis [1]. In the present case the preoperative uric acid value was within normal limits at 5.8 mg/dl. There was no history of gout, but CKD was diagnosed based on the preoperative GFR of 46.0 ml/min. This suggests that even in the absence of a history of gout, in cases with DM and a reduced GFR the possibility of gouty arthritis and septic arthritis should be kept in mind.

To prevent the occurrence of similar events in future we emphasize the measurement of preoperative GFR, appropriate postoperative blood glucose control, and intraoperative lavage. To prevent postoperative septic arthritis the efficacy of thorough lavage with physiological saline containing povidone-iodine has already been confirmed [7, 8]. When preoperative risk factors are noted like in the present case, intraoperative lavage with perfusion fluid containing povidone-iodine may also be beneficial. Although when povidone-iodine is used the blood iodine concentration and tissue damage may be concerns, a concentration in lavage fluid of about 0.35% has been reported to be

safe [8]. On the other hand, if perfusion fluid containing Iodine is used from the start of arthroscopic surgery, the resulting discoloration may interfere with visualization of the surgical field. Accordingly, we now use perfusion fluid containing 0.35% Iodine only after all the arthroscopic surgical manipulations are completed and perform thorough rinsing.

In the present case since the period from the development of symptoms until initiation of optimal treatment was relatively short at about 2 days, the course after rinsing and debridement was smooth, but will continue to require careful follow-up.

Conclusions

We experienced a case that was complicated by uric acid crystal deposition and septic arthritis of the shoulder after rotator cuff arthroscopic surgery. Although considered rare in earlier reports, the possible occurrence of these conditions should be kept in mind. Particular attention is needed in cases with predisposing factors such as preoperative decreased GFR, DM, and advanced age.

Disclosure of conflict of interest

None.

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