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**SUCCESSFUL CORRECTION OF HYPERURICEMIA  
AND FOLLOWING ARTHROSCOPIC INTERVENTION IN A  
YOUNG GOUT PATIENT: CASE STUDY**

***Abstract.** Patient G., male, 32 years old was admitted to Chengdu Rheumatism hospital with the complains of pain and ulceration at the site of big tophaceous stone of fourth finger joint on the right hand as well as the pain and restricted movements in other right hand joints (elbow, wrist, fingers). Patient was first diagnosed with the gout approximately 10 years prior; by his own choice did not receive any urate-lowering treatment, only using oral analgesics during gout attacks. After surgery and following urate lowering therapy patient has noted functional improvement and reduction of pain. Decrease in serum urate levels from 586.7 to 469.3  $\mu\text{mol/L}$  was reported. Wounds healing took from 1 to 1.5 weeks, with the wound on fourth metacarpophalangeal joint of the right hand being the last one to heal due to the wide ulceration defect. The longer follow-up period is needed to fully evaluate functional outcome (6-month follow-up examinations were scheduled).*

***Keywords:** gout, hyperuricemia, tophaceous gout, arthroscopic shaving*

**Introduction**

Late onset is the most usual one for gout, with the prevailing patients of male gender, who are older than 60, being already retired [1]. But pain and restriction of movements in the joints area due to the deposition of uric acid (UA) crystals often lead to the inability to perform not only work but most common daily tasks.

In addition to that, many recent studies point to the rising percentage of earlier gout onset. Elevated serum UA in younger age is related to the cardiovascular diseases [2], metabolic syndrome [3] and other states of deregulation. Exposure to hyperuricaemia and deposition of UA crystals can cause mechanical damage to joints which is accompanied by chronic inflammation and clinically results in chronic pain, functional impairment and radiographic structural changes peculiar to gout [4]. Functional impairment of the joint has the greater impact in younger age by leading to the inability to perform daily work (restricted range of motions) and is sometimes accompanied by massive joint transformation (inability to wear shoes/clothes).

Effective urate-lowering treatment is used to control hyperuricaemia and dissolve UA crystals, which theoretically may stop or even reverse the progression of joint damage [5]. Therefore the most rational approach is screening and treating gout patients in younger age as soon as possible before the major transformations occur.

However up to 100 000 per one million cases of gout are not adequately managed with current urate-lowering therapies and need other options of treatment [1]. Additionally for the patients of younger age hyperuricaemia and early stages of gout are often not viewed as a therapeutical concern. Due to the fact that younger patients are typically seeking medical attention only on the last stages of gout [6], sometimes joints surgery is the only option to relieve pain and restore the function of the joint. The most common surgical techniques used are arthroscopic shaver and open tophectomy [7]. The reported outcomes were generally positive with restoration of function.

### **Case description**

Patient G., male, 32 years old was admitted to Chengdu Rheumatism hospital in October, 2020. At the admission patients' complains were mostly of pain and ulceration in the fourth finger joint of the right hand as well as pain and restricted movements in the right hand joints (elbow, wrist, fingers) due to the big tophi formed there (Figure 1).



**Fig. 1. Patient G., male, 32 years old, photos taken during admission and initial examination. A) Right hand more intensively involved in the tophi formation compared to the left hand; B) Swelling and ulceration of the fourth metacarpophalangeal joint on the right hand**

Patient was first diagnosed with the gout approximately 10 years before the visit. According to him, first attack occurred without any obvious reasons, and also involved fourth metacarpophalangeal joint of the right hand. After seeing doctor, patient had his serum UA levels measured ( $700+ \mu\text{mol/L}$  according to patient) and diagnosed with the gout. By his own choice patient did not receive any urate-lowering treatment, only using oral analgesics during gout attacks. In the course of next seven years gout attacks gradually increased in their frequency and involved feet, hands and elbows.

The occurrence of pain was mostly related to dietary violations (alcohol). Three years ago, the patient developed tophaceous stone in the fourth metacarpophalangeal joint of the right hand, but never sought medical attention. Since then, tophi of different sizes appeared in the joints of feet, arms and hands, restricting mobility and causing discomfort during work and daily life. In recent year gout attacks became even more frequent (sometimes several times a month). Ten days before admittance, patient noticed swelling of the right elbow joint and fourth finger joint, erythema in the local skin area. Three days before admittance, ulceration of the tophi on the right hand's fourth finger joint occurred, with white tophaceous masses leaking out from the skin defect, and this finally convicted patient to see the doctor.

Patient admitted to be heavy smoker (history of smoking >10 years, currently smokes ~20 cigarettes /day), as well as history of alcohol abuse.

During examination diagnosis of gout raised no doubts. Tophi of different sizes, hard on palpation, were located in the joints of hands and feet; along with fresh scars and ulcerations, thinned skin on both hands and right elbow. Skin above fourth finger of the right hand was broken, with white tophaceous masses clearly visible, limiting finger movement function. Other joints showed no swelling, tenderness or signs of muscle atrophy.

In Chengdu Rheumatism Hospital, both xanthine oxidase inhibitors (allopurinol and febuxostat) and uricosuric agents (benzbromarone, sulfipyrazone and probenecid) are approved. According to the patient's condition, additional intravenous drip of vitamin C and sodium aescinate was given as symptomatic support treatment, clindamycin was used to prevent infection, and colchicine, Tongfengding capsule and diclofenac sodium double release enteric coated capsules were taken orally to relieve inflammation and pain.

Patient underwent the procedure of arthroscopic tophi removal for two joints in succession, one after another: right elbow joint and right wrist joint. Procedure took 1 hour 40 minutes. The process underwent without complications, under the effect of local anesthesia. The flat scalpel was used to shave most of the gout stones on the cartilage surface and synovium. Total blood loss amounted about 10ml during arthroscopic access procedure, and local hemostasis was performed.

After surgery and following urate lowering therapy patient has noted functional improvement and reduction of pain. Wounds healing took from 1 to 1.5 weeks, with the wound on fourth metacarpophalangeal joint of the right hand being the last one to heal due to the wide ulceration defect. Decrease in serum urate levels from 586.7 to 469.3  $\mu\text{mol/L}$  was reported. The longer follow-up period is needed to fully evaluate functional outcome (6-month follow-up examinations were scheduled).

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