Unusual localisation of tophaceous gout
A report of four cases and review of the literature

Abstract We report four cases with very unusual manifestations of tophaceous gout. All patients were male, aged between 29 and 67 years. Only one patient had an acute gouty arthritis in his medical history, whereas the other three had never developed clinical symptoms from their hyperuricemia. Two patients had gout tophi in the patella, while the others showed gout tophi in the space of bipartite bones, one in a bipartite patella and one in a tripartite sesamoid bone of the first toe. To our knowledge, gout tophi in the space of bi- or tripartite bones has never been described before.

Introduction In chronic tophaceous gout, urate deposition occurs in articular cartilage, subchondral bone, synovial membrane, joint capsule, and periarticular tissues. Tophaceous deposits in the patella and the space of a bipartite patella and a sesamoid bone are very exceptional, even when gout is well recognized as being a great mimic, with no joint exempt from chronic gouty involvement.

Case reports

Case 1
A 29-year-old man was admitted to our clinic for excision of a traumatized bipartite patella. Some weeks previously he jumped down from a chair and had since then suffered anterior knee pain. On physical examination, the patient was afebrile, with soft-tissue swelling and tenderness overlying the lateral pole of the patella. He walked with a marked limp. The white cell count was within normal limits, without any shift to the left. The erythrocyte sedimentation rate was 75 mm/h. The other laboratory findings were normal, except for a slightly increased serum urate value at 419 mmol/l (normal range for men: 178–416 mmol/l). Skyline roentgenograms of the patella showed a lucent patellar lesion in the space of a bipartite patella (Fig. 1). A medial arthrotomy of the knee joint was performed and revealed a loose bipartite patella. The space of the bipartitum was filled with a chalky, white material with the consistency of toothpaste. This material and the bipartitum were excised. No other pathological findings could be seen in the knee joint. Intraoperative cultures were negative for aerobic and anaerobic bacteria, fungi, and acid-fast bacilli. Histologic examination of the surgical specimens showed necrotic debris, acute and chronic inflammatory tissue, and extensive deposits of crystalline material with focal foreign-body reaction (Fig. 2). Polarized light microscopy showed these crystals to be negatively birefringent, uric acid crystals.

One month after discharge the patient was asymptomatic. The serum uric acid level was within normal limits.

Case 2
A 41-year-old hobby jogger developed an acute gouty arthritis of the first metatarsophalangeal joint after a run. It was the first attack of gout in his medical history. His physician prescribed rest for the joint and administered some nonsteroidal anti-inflammatory agents. This treatment was successful, and the podagra disappeared rapidly. However, upon starting training again, he felt persistent pain in his great toe. He was finally sent to our clinic for further treatment. On physical examination, the patient’s great toe showed no tissue swelling and a normal color of the overlying skin. Normal and painfree range of motion in the first metatarsophalangeal joint, but a remarkable tenderness of the sesamoid bone were noted. The patient was afebrile with a normal sedimentation rate and a normal white blood count. The serum uric acid level was slightly increased (463 mmol/l). The roentgenograms showed a tripartite medial sesamoid bone (Fig. 3). Although a fracture of the sesamoid bone could also have been possible, we thought primarily of a gout tophus, because bi- or tripartite sesamoid bones of the toes are not that rare [5]. The patient underwent surgery, and the tripartite sesamoid bone was excised. The space of the tripartite bone was filled with crystalline material. Histologic examination of the excised bone confirmed the diagnosis of a gout tophus. Wound healing was uneventful, and the patient restarted training without any complaints.

Case 3
A 28-year-old man presented to our clinic complaining of left anterior knee pain. He denied any trauma and stated that the pain was aching and dull in nature but spontaneously resolved with rest and anti-inflammatory agents. On physical examination, a local tenderness of the patella combined with a mild soft-tissue swelling was found. There was no ligamentous instability. Apart from a slightly

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increased serum uric acid level, no other pathological laboratory findings appeared. The roentgenograms demonstrated a lucent lesion within the bony substance of the patella (Fig. 4). During the open biopsy to rule out a metastatic lesion, curettage yielded a chalky white material. Histologically, this represented a gouty tophus with its typical aggregates of yellow, negatively birefringent, needle-shaped crystals surrounded by foreign-body giant cells and fibrous tissue. The patient's symptoms abated postoperatively. No more pain and no loss of knee motion were recorded at the last follow-up.

Case 4
A 76-year-old man was admitted for a hemorrhoidectomy. During his hospital stay, he mentioned that sometimes he suffered from anterior knee pain. Medical history, clinical examination, and laboratory findings inclusive of the serum uric acid level were inconspicuous. The roentgenograms showed nearly the same lucent lesion in the patella as described in case 3. During open biopsy and curettage of this patella lesion, we found the same chalky material. Histologic examination confirmed the diagnosis of an intraosseous gout of the patella. A follow-up was unfortunately not possible because the patient died of a heart attack several days after discharge.