Case Report

Multiple Gouty Tophi in Both Soles: A Case Report

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ABSTRACT

Although gout is a common disease, patients with tophi are infrequently clinically examined. In this case report, a 40-year-old man presented with multiple nodules in both soles. The nodules, gouty tophus, were diagnosed following pathological examination, and multiple gouty tophi in both soles is a rare condition. The take-home message is that subcutaneous nodular lesions in soles need to be considered during evaluation.

Key words: gout, multiple tophi, plantar lesions, soles

Introduction

Gout is a common disease characterized by hyperuricemia 1. Gouty tophus develops in the final stage, which occurs approximately ten years after initial diagnosis, on average 2–4. Patients with tophi are infrequently clinically examined, and sometimes this condition is difficult to diagnose. We report a rare case of multiple gouty tophi in both soles.

Materials and methods

A 40-year-old man with a history of schizophrenia and hyperuricemia who was treated for 10 years at other clinics presented to our outpatient department with nodules in his bilateral plantar skin. The nodules were initially noticed five years prior to presentation and had been gradually increasing in size. Although the initial onset of gout was uncertain, he had been treated with drugs for hyperuricemia for a few years by another doctor prior to the development of the sole lesions. At the first visit to our hospital, there were multiple lesions at both plantar subcutaneous areas, with no pain. The skin over the lesions was smooth with varying thicknesses. The left-side lesion was the biggest of all the nodules, and the overlying skin was thicker (Fig. 1). The lesion was approximately 3 cm in size and seemed to adhere to its surrounding tissues with poor mobility. The T1-weighted magnetic resonance imaging (MRI) revealed low intensity signals, and the margin was smooth and clear, based on which an atheroma was suspected by the radiologist. In addition, both plantar fasciae were thickened (Fig. 2). However, as a definitive diagnosis was not obtained by imaging studies alone, an incisional biopsy of each lesion was performed. The pathological examination revealed large and small cohesive nodules with acicular crystal deposits and foreign body granulation at the margin. These are typical pathological findings of gouty nodule and led to the diagnosis of gouty nodules (Fig. 3).

The blood test after the biopsy indicated high levels of uric acid (10.6 mg/dL). There were no ulcers, and the patient did not complain of pain. Therefore, the patient and his mother did not wish to proceed with surgical treatment, and conservative treatment with medications was initiated to control the disease.

Discussion

Gout is an inflammatory arthritis characterized by hyperuricemia and deposition of monosodium urate crystals within joints and other tissues 1. Gout commonly manifests in men aged 40 to 50 years. Gout begins with asymptomatic hyperuricemia, and gouty tophus develops in the final stage, which occurs approximately ten years from initial diagnosis, on average 2–4. Tophi usually occur in an overlying skin above
the joint where arthritis occurs and can be palpated as hard and smooth nodules. Tophi rarely occur around the eyes\(^5\)\(^-\)\(^7\). As the tophus progresses, it may erode the bones\(^8\). However, in the recent past, there has been improvement in the drug management of gout nodules, which has consequently reduced their occurrence, and surgical indications are mostly limited to pain and loss or difficulty in function.

In this case, the patient was of typical age for gout development. Although gouty tophi in the lower limbs usually occur in the overlying skin above the ankle joint or the first metatarsophalangeal joint, this patient had many nodules under the plantar skin, bilaterally. The differential diagnoses of nodules in the plantar skin include plantar fasciitis, leiomyoma, rhabdomyosarcoma, liposarcoma, and Ledderhose disease. Imaging studies such as MRI or computed tomography can help lead to a diagnosis; however, imaging is not specific enough to differentiate other soft tissue tumors\(^9\). In this case, the MRI was not specific, and a biopsy was required to confirm the diagnosis. Notably, gouty nodules that occur in the plantar aspect are rare.

Gouty tophus is deposited by the precipitation of saturated urate in the blood and usually occurs at a site where arthritis occurs\(^2\). In this case, there was thickening of both sides of the plantar tendon on MRI; therefore, inflammation was suspected\(^9\). Considering that gouty tophus is liable to occur at the site of inflammation, inflammation of the plantar aponeurosis may have been the cause of multiple gouty nodules.

In a case of head and neck nodules, surgical therapy may be opted owing to esthetics and functional aspects. When the lesion occurs in the foot, pain and/or gait dysfunction are considered indications for surgery. However, as this case presented on an unexposed area on the plantar skin of both feet and walking was not affected, we decided to prioritize drug treatment without surgery. Moreover, both the patient and his family did not want surgery. Nonetheless, if symptoms such as pain develop in the future and the patient and his relatives provide their consent, a surgical treatment approach will be considered.

**Conclusion**

The best of our knowledge, there are no reports of gouty
tophus occurring in the plantar regions. This patient presented clinical findings that have not been reported thus far, namely, multiple tophi in both soles. Since this case was difficult to diagnose based on clinical findings and imaging findings, a pathological evaluation was required. Subcutaneous nodular lesions in the plantar skin are difficult to diagnose based on physical findings and imaging findings, and gout nodules need to be considered during evaluation.

Acknowledgments

None.

Conflicts of interest

None.

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