

Case Report

Gout Associated with Recurrent Aggressive Chronic Lymphocytic Leukemia: A Case Report

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Abstract

A patient with a positive history of extensive Chronic Lymphocytic Leukemia and previous CLL treatment presents with a right foot painless mass. Due to the patient's history and an increase in serum uric acid, tumor lysis syndrome as well as severe hematological abnormality could not be ruled out. The patient's radiographs displayed a diffuse lytic lesion at the distal aspect of the fifth metatarsal not communicating with the adjacent joint and strongly indicating a conversion or blastic crisis. There was a mild history of gout in this specific anatomical area in the 1990s; however, in the presence of this type of lesion and his medical history, a biopsy and extensive histological evaluation of tissue was needed and assessed due to the nature of aggressive conversion. Our case study provides knowledge of the association of destructive gout with CLL, which may assist surgeons in determining the proper radiographic workup prior to biopsy, and will certainly be of assistance in the proper counseling of patients with a similar presentation.

Keywords: Gout; Chronic Lymphocytic Leukemia; Richter's Transformation; Tumor Lysis Syndrome

Introduction

Chronic lymphocytic leukemia (CLL) is a lymphoproliferative disorder characterized by a progressive accumulation of functional, yet incompetent lymphocytes [1]. The clinical and physiological course of CLL can be variable with the possibility of malignant transformation. Some examples include tumor lysis syndrome, conversion to diffuse large B cell nonhodgkin lymphoma of bone (Richter's Transformation), or conversion to therapy-related acute myeloid leukemia (AML) [2-6]. While

lytic lesions have been described in patients with atypical symptoms mentioned above, the association of gout with CLL has not been previously described. Failure to recognize the association of destructive gout with CLL might lead to a delay in diagnosis in searching for a more malignant transformation. The ramifications of that delay could result in unnecessary studies, test, and treatment to include biopsy.

In order to show the importance of this complication we present a case on a patient who had been in CLL remission and

unfortunately recurrence for 16 years and returned to clinic with both signs and symptoms consistent with an aggressive destructive conversion. A biopsy of the lesion verified the presence of destructive gout rather than malignant transformation.

Case Report

A 65-year-old male presented with a painless mass on the dorsolateral aspect of his right foot. The mass was first noticed two to three weeks prior and the patient could not recall if there were any traumatic or infectious events leading up to its presentation. The patient did note a tingling sensation in his right fifth metatarsalphalangeal joint (MTPJ) and noticed a bump beginning to develop. The patient was unaware of any progressive changes to his foot and had not noticed any other masses to his lower extremity. The mass had not affected his functionality of gait and he was able to weight bear without any limp or deforming. The patient denied arthralgia in joints of both the upper and lower extremity. His medical history was positive for chronic lymphocytic leukemia for 16 years, which went into remission February 2011 following extensive chemotherapy. His medical history also included hypertension, diabetes mellitus, nephrolithiasis, hemolytic anemia as well as treatment for a mild gout attack in a similar location in the early 1990s. Focused exam with positive pertinent findings included: a raised nodule at the right first MTPJ and only mild pain to palpation at the fifth MTPJ.

Radiographs revealed a radiolucent mass with heterogeneous bone matrix of the head of the fifth metatarsal (Figure 1). There was an associated exostosis and overlying soft tissue swelling. The zones of transition were moderate without cortical or periosteal involvement (Figures 2A and 2B). MRI revealed soft tissue mass at the fifth metatarsal head of the right foot with bony involvement; however it did not appear to communicate with the fifth MTPJ (Figure 3). The mass had the same isotensity with that of muscle tissue (Figures 4A and 4B).

Figure 1.



Figure 2A.

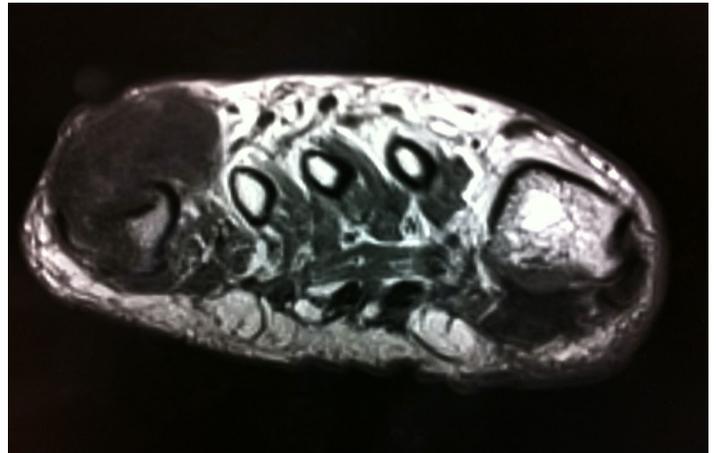


Figure 2B.

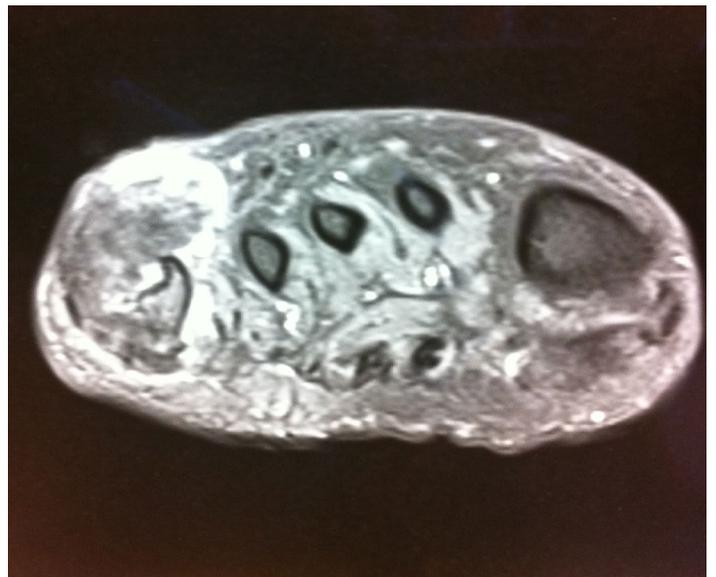


Figure 3.



Figure 4A.**Figure 4B.**

Labs at time of workup included leukocytosis of 10.6 (range, 3.6 to 10.0), thrombocytopenia of 87 (range, 140 to 420), neutropenia of 20.5 (range, 38.5 to 76.5), and severe lymphocytosis of 8.0 (range, 0.9 to 3.0), as well as an increase in serum uric acid of 7.1 (<6). On assessing the cluster of differentiation markers; the CD3, CD4, CD8, CD56 were all decreased, while CD19 was increased.

Chest, abdomen, CT scan of the Pelvis, and three phase Bone Scan were undertaken to assess metastasis, were all normal.

Since concern existed for a malignant metastatic transformation of his CLL, the patient was taken to the operating room in June 2011 for a biopsy of the lesion. During the biopsy the lesion was found to be poorly circumscribed and filled with a white material of chalky consistency. As previously noted in

pre-operative X-rays, there was no communication with the MTPJ. The histological exam revealed crystalline material that showed negative birefringence on polarized light microscopy resulting in a diagnosis of gout.

Discussion

Gout has commonly been described and observed in sites where tophaceous deposits are within cartilage, synovium tissue, tendon and related tendon sheaths, or soft tissue structures generally on extensor surfaces [7]. There have also been rare reports of gout presenting as either an isolated or diffuse intraosseous lesion [8-13]. In these atypical cases where gout crystals have deposited into bone it is advocated that the deposits are made in the haversian system, then enlarge within the cavitation of bone eliminating the matrix [7]. It is projected that the monosodium urate crystals will deposit in metaphyseal or subchondral bone due to the extremely high affinity for cartilaginous tissue [10]. In 1981 Resnick et al. [12], described six different cases that presented with intraosseous tophi calcifications in the hands and feet with the majority of foot lesions appearing in the metatarsals; [12] despite this uncommon presentation their patients did have the typical radiographic findings of both acute and chronic gout as well as associated renal disease. Resnick described the incidence of these bony deposits to be less than ten percent [12].

In addition to the presentations above there have also been lytic lesions and soft tissue tophi expansion without prior symptoms of gout with unusual pathological episodes. A case described by Foucar et al. [14], was thought to be the radiographic appearance of a bone neoplasm, osteolytic metatarsitis or even a possible femoral cyst was sent to pathology and diagnosed as an intraosseous gouty deposit [14]. There have also been reports of fractures occurring secondary to gouty lesions [8]. Chadwick et al. [8] describes their patient who experienced a fracture in the fifth metatarsal as having a history of gout, but a completely normal uric acid level and absent of previous presentation of bony lytic involvement [8]. Nguyen et al reviewed several cases of gouty lytic involvement and described two cases in the foot that had apparent communication with an adjacent joint [15].

In developing a differential diagnosis and treatment protocol of similar lesions described in the current study, it is crucial to consider various etiologies based on medical history. These would include infections, metabolic diseases, and if possible benign or malignant neoplasm such as CLL.

The overall literature on CLL is substantial and continues to accelerate with constant advancements in the medical world. As yet, to the best of our knowledge, the literature associated with a gouty lesion associated with CLL converting to a more aggressive disorder is non-existent.

The diagnosis of CLL is typically based upon a complete blood count with differential and flow cytometry of the peripheral blood to determine the phenotype of circulating lymphocytes [16]. The progression of CLL is difficult to assess for specific measures associated with the variability of presentation. Despite this consequence, patients with CLL appear to have a two to five times increase in risk of the development of a second lymphoid malignancy, with up to 40% of these cases converting to a complete separate cell origin, such as aggressive lymphoma (Richter's transformation) [17]. A Danish Cancer Society study of over 12,000 patients with CLL looked at the relative risks for developing a nonlymphoid second cancer and bone cancer was the highest at 4.3 [18]. Conversion of CLL to AML has also been documented in the literature and often attributed to chemotherapy treatment [19]. These patients usually present with general fatigue and weakness frequently attributed to anemia secondary to the blastic conversion of these cells [20].

Regarding the case reported in this publication, the patient presented with a painless mass, together with a positive history of extensive CLL, an increase in serum uric acid that would not rule out tumor lysis syndrome. This finding occurs post-chemotherapy or even without therapy in some cases and involves the death of the specific cancer cells and the degradation products from those cells with associated renal failure. The patient's radiographs displayed a diffuse lytic lesion at the distal aspect of the fifth metatarsal not communicating with the adjacent joint and strongly indicating a conversion or blastic crisis due to reasons mentioned above. He did have a mild history of gout in this specific area in the 1990s. In the presence of this type of lesion and his medical history, a biopsy and extensive histological evaluation of tissue must be assessed due to the nature of aggressive conversion.

Conclusion

Knowledge of the association of destructive gout with CLL may assist surgeons in determining the proper radiographic work-up prior to biopsy, and will certainly be of assistance in the proper counseling of patients with a similar presentation to avoid extensive workup as well as concerns with the patient.

References

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