Swollen Hands and Acute Myeloid Leukemia:
Leukemia and Secondary Hypertrophic Osteoarthropathy

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Introduction

•Secondary hypertrophic osteoarthropathy is a paraneoplastic phenomenon presenting as clubbing of digits.
•This condition is most frequently seen in pulmonary neoplasms and lymphoma.
•The exact pathophysiology of hypertrophic osteoarthropathy is unclear.
•Importantly, the instance of hypertrophic osteoarthropathy in concert with acute myeloid leukemia has only been reported in literature once.

Patient Case

Patient is 73-year-old male with a history of hypertension, hypothyroidism who was diagnosed with acute myeloid leukemia in spring of 2020.

At the time of his AML diagnosis the patient presented to his primary care provider with aching clubbing and blistering of his fingers bilaterally. He had undergone a round of chemotherapy (Vidaza + Venetoclax) prior to the complaint during which time he received glucocorticoids during his infusions. During the break between chemotherapy rounds, his hand swelling worsened.

Physical exam: Bulbous swelling of the end of bilateral digits with tenderness to palpation over the DIPs. Pedal pitting edema.

Bilateral plain film x-rays of the hands were performed. Patient was started on low-dose prednisone.

Hypertrophic Osteoarthropathy

- Typically associated with lung cancer, lymphomas, and non-neoplastic pulmonary conditions.
- Presents as abnormal proliferation of soft and osseous tissues at distal portion of extremities.
- Secondary hypertrophic osteoarthropathy pathogenesis is poorly understood but some theories suggest:
  - Circulatory bypass of the lung by megakaryocytes secrete growth factors.
  - Release of factors like VEGF from tumors with subsequent edema and bone growth.
  - Elevations of prostaglandin E2.
- Resolution is based on treatment of underlying malignancy. However, the disease may be refractory even after resolution of malignancy. In these instances, bisphosphonates may benefit patients.

Workup

Labs: ESR 69, CRP 112, RF negative, ANA by IFA negative, anti-CCP antibodies negative. CMP significant for elevated calcium and alkaline phosphatase. CBC significant for pancytopenia with lymphopenia and neutropenia.

Imaging: Bilateral hand plain film x-rays showed no acute fracture or malalignment. Apparent enlargement of fingertips was reported especially when compared to plain film of right hand from 2016.

Images

Imaging, clockwise: AP image from 2016, lateral image from 2016, lateral image from 2020 showing soft tissue swelling, AP image from 2020 showing soft tissue swelling, photos of hands showing soft tissue swelling.

Discussion

•Hypertrophic osteoarthropathy is most frequently seen in pulmonary neoplasms and lymphomas.
•This case demonstrates a rare presentation of hypertrophic osteoarthropathy in the setting of leukemia.
•Treatment of the underlying malignancy typically resolves the osteoarthropathy; recurrence of the osteoarthropathy may indicate cancer relapse.

Next Steps

- **Repeat hand x-rays in 6 months.**
- **Follow clinical course throughout treatment.**

References

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