CLINICAL VIGNETTE

Bywaters Lesions, a Dermatologic Manifestation of Rheumatoid Arthritis

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Introduction

Bywaters lesions, otherwise known as nail fold vasculitis, is a type of rheumatoid vasculitis.[1] Rheumatoid vasculitis is a rare manifestation of Rheumatoid Arthritis and is reported in about 1% of patients with RA.[2] It occurs more commonly in patients with long standing erosive rheumatoid arthritis, with elevated levels of rheumatoid factor and/or cyclic citrullinated peptide antibodies.[2] The manifestations of Rheumatoid vasculitis include constitutional symptoms, cutaneous vasculitis, vasculitic neuropathy, ocular inflammation, but in rare cases can also affect other organ systems, including the heart, lungs and kidneys.[2]

One specific subtype of rheumatoid vasculitis is isolated nailfold vasculitis or Bywaters lesions. These lesions are isolated to the skin and are not associated with the features of the necrotizing systemic vasculitis seen with traditional RA vasculitis. They usually have a benign course and respond to treatment of the underlying RA.[1] These lesions were first described by Dr. Eric Bywaters, a British rheumatologist, in 1957, in a paper titled "Peripheral Vascular Obstruction in Rheumatoid Arthritis".[3]

This clinical vignette presents nailfold vasculitis, in the setting of active Rheumatoid Arthritis.

Case Presentation

A 41-year-old female with Seropositive Erosive Rheumatoid Arthritis presented to the rheumatology complaining of new onset painful fingertip lesions as well as active hand joint pains. She had rheumatoid factor (RF) negative, anti- cyclic citrullinated peptide (CCP) positive Rheumatoid arthritis (RA) with erosive disease in the carpal bones of the wrist, initially diagnosed at age 25. The patient's treatment included weekly oral Methotrexate as well as Infliximab infusions every 8 weeks with previously good control of her underlying disease. Over the prior 3 months she noted increasing joint pains, despite compliance with her medications.

She described her lesions as painful red dots on fingertips and sides of her nail beds. She also noted painful skin colored nodules on the palmar aspect of bilateral fingers. She had no prior history of similar symptoms and denied trauma to the hands, new medications or new topical exposures.

Serologies to further evaluate the cause of the lesions, included an elevated anti-nuclear antibody (ANA) greater than 1:1280 homogenous pattern as well a positive double stranded DNA (dsDNA) by indirect immunofluorescence greater than 1:1280. Anti-histone antibody was mildly elevated to 1.2 (normal less than 0.9). Erythrocyte sedimentation rate was normal, but C-reactive protein was elevated to 1.1 (normal less than 0.8). Complement levels were normal. Additional ANA sub-serologies including anti-SSA and anti SSB antibodies, anti- smith and anti- RNP antibodies, anti-centromere antibodies, and anti-scl 70 antibodies were all negative. Anti-phospholipid labs including lupus anticoagulant, Beta 2 glycoprotein and anti-cardiolipin were negative. Anti-neutrophil cytoplasmic antibodies and cyricrit were negative. Serum electrophoresis and serum immunofixation were also negative for any monoclonal immunoglobulins.

Despite the positive ANA, dsDNA and anti-histone AB, the patient did not exhibit any symptoms of drug induced lupus (DIL), including fever, rash, myalgia, cardiac or pulmonary serositis. She had an active inflammatory arthritis which can be seen in DIL, but this was attributed to her documented Rheumatoid Arthritis.

With active fingertip lesions and the positive ANA the possibility of Chilblains was also considered. Chilblains is characterized as erythematous macules and papules at the site of cold exposure, occurring primarily in the fingers and the toes. The patient's symptoms were not associated with cold weather, making Chilblains less likely.

With history of long-standing Rheumatoid arthritis, rheumatoid vasculitis was considered, as the finger and nail fold lesions appeared purpuric. However, there was no rash on the rest of the upper extremities or lower extremities. The case was discussed with Dermatology, and although the patient was unable to be evaluated in person, her lesions were likely Bywaters lesions, also known as nail fold vasculitis, given their appearance, location and their occurrence with active arthritis symptoms from uncontrolled RA. The palmar finger nodules were rheumatoid nodules.

Infliximab infusion was only offering relief for the patient's rheumatoid arthritis including her new dermatologic manifestations. She was given high dose Prednisone with taper for 10 days, which improved of the fingertip lesions and her joint

pain. With decreasing efficacy of Infliximab, the patient was also switched to oral Tofacitinib resulting in good control of her arthritic symptoms and resolution of her fingertip and nail fold lesions.

Her positive ANA and double stranded DNA were attributed to drug induced antibodies from anti-Tumor Necrosis Factor exposure.

Discussion

Bywaters lesions are multiple small, red brown purpuric lesions that can occur on the nail fold, nail edge or the dorsal fingers.[4] The lesions are due to thrombosis of the nail fold capillaries, and begin as erythematous papules that later become darker as they heal. They form a brown eschar, which is later spontaneously extruded from the superficial dermis.[5] The lesions can be associated with mild pain, but are usually non-scarring. Skin biopsy demonstrates an occlusive arteritis with intimal proliferation in capillaries,[3] as well as intracorneal hemorrhage/ thrombosis.[5] Patients with isolated Bywaters lesions have good prognosis and usually respond to topical steroids and treatment of the underlying rheumatoid arthritis.[1,6]

In addition to Bywaters lesions, the patient also had subcutaneous rheumatoid nodules on the palmar fingers. Patients with long standing seropositive rheumatoid arthritis with nodules are more likely to develop RA associated vasculitis.[7]

The presence of antinuclear antibodies and anti-double stranded DNA antibodies, also raised the possibility of drug induced lupus, which can occur with use of anti-TNF agents. While ANA positivity can be seen in DIL, dsDNA antibodies are highly specific for idiopathic lupus and are rarely found in DIL.[8] The presence of these antibodies with anti-TNF exposure without drug induced lupus is well described. ANA and dsDNA antibodies are reported in 13-83% and 3-32% of patient on anti-TNF agents.[8]

Conclusion

These fingertip lesions in a Rheumatoid Arthritis patient are a manifestation of mild rheumatoid vasculitis, that is responsive to topical steroids and treatment of underlying RA activity. This patient with seropositive RA developed rheumatoid nodules on the palmer aspect of the fingers.

This patient developed drug induced ANA antibodies as well as double stranded DNA antibodies related anti-TNF medication without any clinical signs of drug induced lupus.

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