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Rheumatoid Nodule Mimicker Mycobacterium Haemophilum: A Case Presentation

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Abstract:

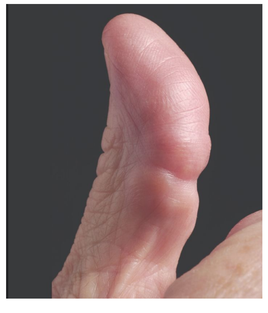
Mycobacterium Haemophilum is a rare infection that can present in humans as subcutaneous nodules and cutaneous lesions. With a growing number of immunocompromised patients, M. Haemophilum infections are becoming more common. Rheumatoid nodules in comparison are very common and can occur in approximately 25% of patients with Rheumatoid Arthritis (RA). Here we discuss a case in a patient with Rheumatoid Arthritis who developed subcutaneous nodules that mimicked rheumatoid nodules, but were later determined to be infectious nodules from Mycobacterium Haemophilum.

Background:

Mycobacterium Haemophilum is a rare non-tuberculous Acid Fast Bacillus that is becoming more common with increasing number of immunocompromised patients in the United States. M. Haemophilum has been isolated from the environment, specifically water reservoirs. It has also been observed in some animals and in humans. Etiology in most patients remains unclear, but there have been cases reported after surgeries, procedures, acupuncture, and tattoos.[3] M. Haemophilum is known for its difficult growth requirements including need for iron hence in its name Haemophilum "blood loving."[2] In addition it requires lower incubation temperatures to grow (30˚C).[3] Given these difficult growth requirements, Clinicians need to be mindful of this organism or it can evade diagnosis.

M. Haemophilum most commonly presents as subcutaneous nodules and cutaneous lesions occurring on the extremities especially over joints. But can also present as cervicofacial lymphadenitis, septic arthritis, osteomyelitis, and pneumonitis. If not promptly treated M. Haemophilum nodular cutaneous lesions can progress to deep cutaneous lesions and further progress to disseminated disease.[1]

Rheumatoid arthritis is the most commonly diagnosed inflammatory arthritis in the United States. Rheumatoid nodules are a common dermatologic manifestation of RA. RA nodules are commonly located subcutaneously along the extensor surface of joints especially at the olecranon process. Rheumatoid nodules are more common in patients with seropositive RA and are typically non-tender. Rheumatoid arthritis patients on immunosuppressive treatments are at increased risk for M. Haemophilum. Given this increased risk and similarity of location of nodules M. Haemophilum nodules can mimic RA nodules.
Pictured below example of Rheumatoid Nodule of the thumb[4]:



Case Presentation:

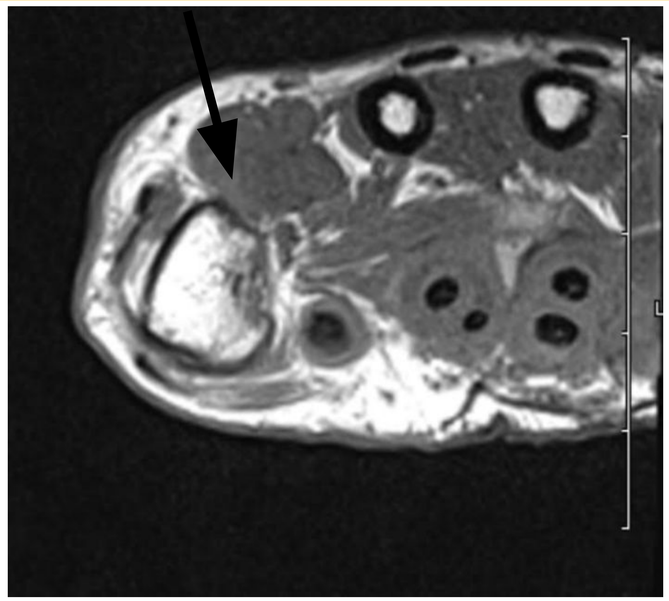
Patient is a 66 year old female diagnosed originally with Seronegative Rheumatoid Arthritis after presenting to rheumatology with complaints of pain in bilateral wrists, myalgias, morning stiffness and fatigue. Physical examination was positive for swelling bilateral wrists and 1st MCP joints bilaterally. No obvious nodules at that time. Patient was originally treated with methotrexate, but had continued symptoms of right hand pain. MRI of the right hand at that time showing joint erosions of the 1st MCP, 1st DIP with acute inflammatory component consistent with rheumatoid arthritis. Patient was switched to Humira (Adalimumab) with improvement in symptoms.

After 3 years of improvement in symptoms and decreased pain, patient presented with complaint of pain in the right hand. She had an MRI of the right hand showing acute synovitis and tenosynovitis throughout the hand with multiple joint erosions consistent with inflammatory arthropathy. In addition multiple subcutaneous soft tissue nodules were present. Patient at that time was switched from Humira to Enbrel (Etanercept).

Several months later the patient presented with complaint of nodule on the left elbow. Physical exam positive for large palpable subcutaneous nodule on the extensor surface of the left elbow, limiting range of motion. She was referred to surgery. She had biopsy done by surgery showing tissue with chronic inflammatory changes. Fluid drained from the elbow appeared yellow and was sent for analysis. Aerobic and anaerobic cultures were negative. AFB smear was negative. The patient was switched to Orencia (Abatacept).

Patient 6 months later self referred to surgery for carpal tunnel syndrome of the right hand. She had flexor tenosynovectomy, palmar tenosynovectomy and steroid injection of the right thumb flexor sheath. Surgical specimen sent smear and cultures. Cultures were negative, but AFB smear came back positive. Patient was referred to Infectious Disease who started patient on Moxifloxacin, Clarithromycin and Ethambutol.

Despite treatment with antibiotics patient had a new large nodule that formed on the right thumb. She had debridement of the right thumb and flexor sheath. Specimen was sent for smear and culture which were negative. Same specimen was sent out to University of Washington Molecular Diagnosis Microbiology Lab a lab specialized in the detection of direct detection of Acid-Fast Bacilli DNA from tissues. PCR using rpOB primary set showed Mycobacterium Haemophilum from specimen of the right thumb tenosynovium. Patient had regrowth of nodule in the right thumb and extensor tendon of the wrist and required repeat debridement. Pathology revealed necrotizing granulomatous inflammation. Patient completed over 1 year of treatment with Moxifloxacin, Clarithromycin, and Ethambutol with resolution of nodules.



MRI Right thumb showing nodule

Discussion:

Mycobacterium Haemophilum can present as a cutaneous infection in Immunocompromised patient that can mimic Rheumatoid nodules. Nodules in early stages M. Haemophilum infection and Rheumatoid nodules can both occur along the extensor surfaces of joints making them difficult to distinguish. Rheumatoid arthritis patients on immunosuppressive treatments are at increased risk for M. Haemophilum. Given this increased risk and similarity of location of nodules M. Haemophilum nodules can mimic RA nodules. The Clinician should have M. Haemophilum on their differential for a new nodule in a patient with Rheumatoid Arthritis. Cultures and Acid Fast Smear can be negative and should not eliminate the M. Haemophilum from the differential diagnosis. M. Haemophilum cultures can take up to 6 weeks to grow even at the proper temperature and medium. Use of PCR to assess tissue samples for M. Haemophilum can aid in the diagnosis. If clinically suspected immunosuppression medication should be stopped and patient should be started on triple antibiotic therapy. There are no guidelines to treatment in the literature clarithromycin, ciprofloxacin, and rifamycin have been used for at least 12 to 24 months.

References:

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4) Stacey-Jones, Seren. Rheumatoid Nodules. *Institute of Medical Illustrators.*