Clinical Quiz: A woman with mechanic's hands

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Received: 4 May 2020

Accepted: 17 June 2020

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DOI 10.5001/omj.2021.75

A 31 –year-old woman presents with shortness of breath on exertion for the past six months. The symptoms had progressively worsened for the past one month. She had an episode of chest infection prior to her visit in the clinic. She also complains of intermittent lower limb weakness with bilateral large joint pain leading to difficulty in ambulation. There were also intermittent episodes of non-specific joint pain of the hands and wrist associated with skin rash. She has no known medical illness.

On examination, she was afebrile, mild tachypnoeic with normal vital signs. Hands examination showed hyperpigmented and hyperkeratosis of the palms as shown in the picture (Figure 1). No joint deformity or rashes seen. Lungs examination revealed bilateral fine inspiratory crepitations. Other examinations were unremarkable. Radiographic imaging is shown as above (Figure 2 and 3).

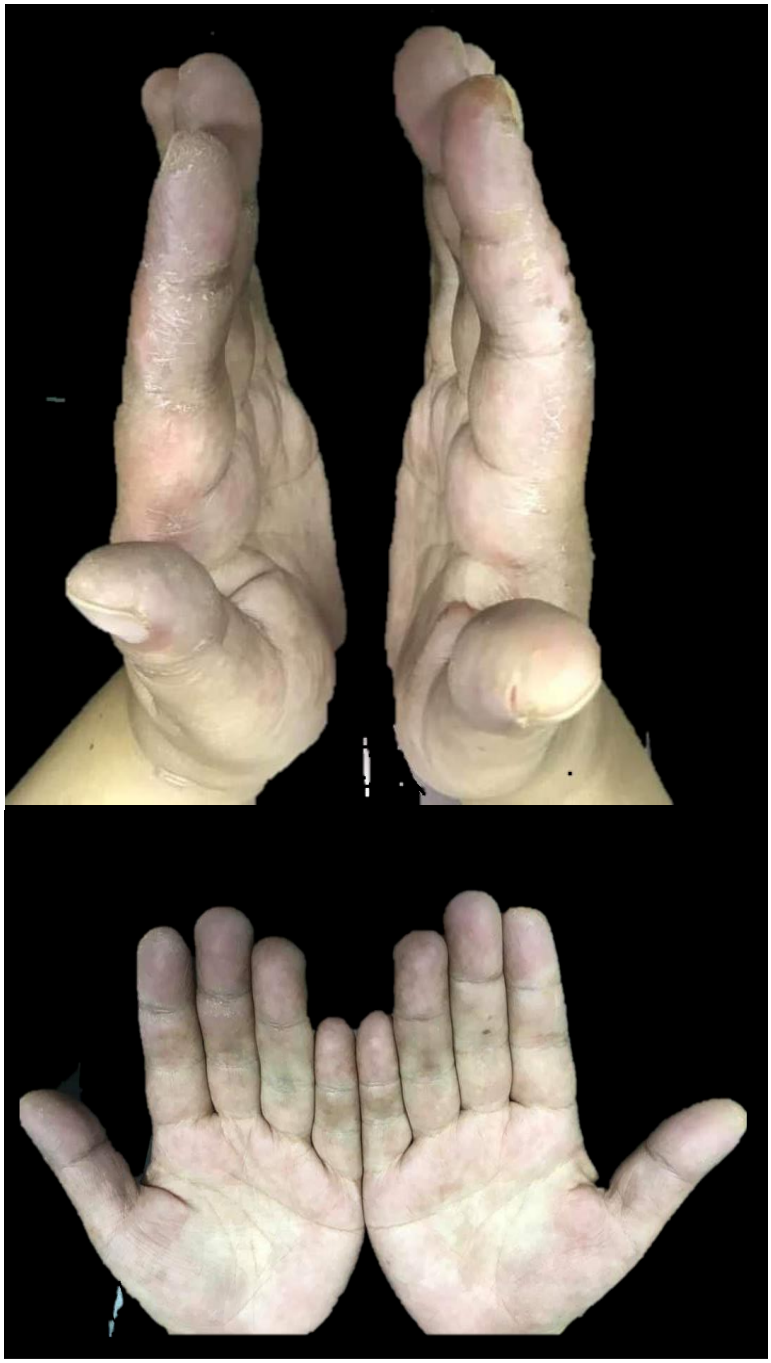

Figure 1. Hyperpigmentation and hyperkeratosis over palmar aspect.

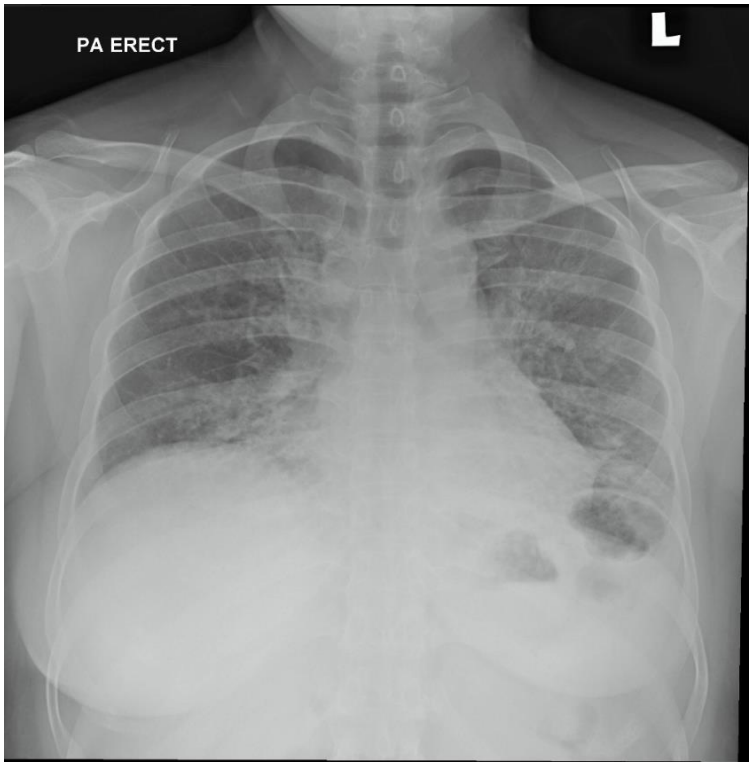

Figure 2: Chest x-ray.

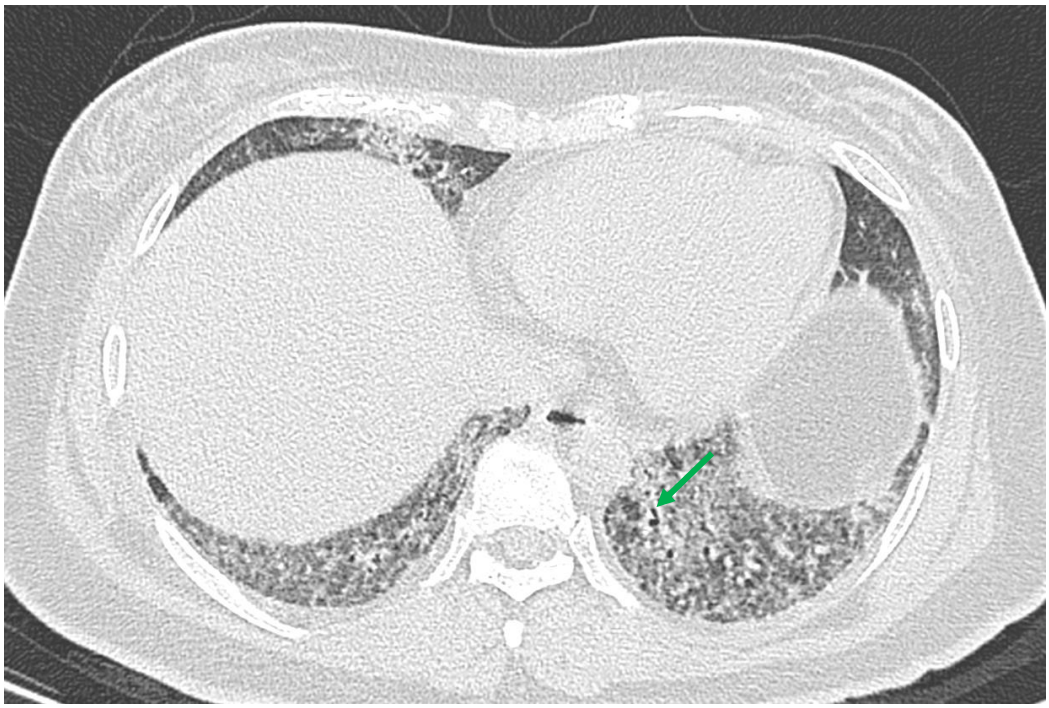

Figure 3: High- Resolution CT scan (HRCT) of thorax shows lower lobe predominant ground-glass opacity with peri-bronchovascular predominant, traction bronchiectasis (arrow), and reticulation.

Questions

1. What is the most likely diagnosis?

   A. Anti- synthetase syndrome

   B. Systemic sclerosis

   C. Rheumatoid Arthritis

   D. Systemic Lupus erythematosus

Answer

A. Anti- synthetase syndrome

Discussion

Anti-synthetase syndrome is an autoimmune disorder characterized by the presence of autoantibody to aminoacyl transfer RNA synthetases (tRNA) with clinical manifestations that may include interstitial lung disease (ILD), myositis, non- erosive arthritis, Raynaud's phenomenon and/or mechanic's hands[1-2]. It is also known as one of the idiopathic inflammatory myopathy (IIMs) apart from dermatomyositis and polymyositis, with higher rate of ILD. The ILD that happens in anti-synthetase syndrome are far more severe and has higher mortality rate. Anti-synthetase syndrome is a rare disorder that has a predominant towards females rather than males. The age of onset ranges from the late adolescent to the elderly age group with a mean average of the 50s[2-3].

According to the revised criteria in 2011 by Solomon et al, the presence of anti-aminoacryl tRNA synthetase, two major or one major with two minor criteria is needed in order to make the diagnosis of Anti- synthetase syndrome[2]. This includes ILD, polymyositis or dermatomyositis for the major criteria. As for the minor criteria includes arthritis, Raynaud's phenomenon and mechanic's hand[2]. Nevertheless, the absence of anti-synthetase antibody may not exclude the diagnosis since antibody fluctuates with disease activity thus must be interpreted with caution.

Patients with anti-synthetase syndrome may present with various presentations and mimic other connective tissue diseases. Chronic cough and progressive shortness of breath indicating ILD

are reported to predominate during initial presentation (86%) followed by myositis (73%) and arthritis (63%)[3]. In patients with ILD, mechanic's hand which is hyperkeratosis and hyperpigmentation of the hand should be inspected as it is usually a subtle sign that could be missed [1]. Depending on the clinical presentation, additional investigation may be warranted. However, patient who presents with unexplained fever, progressive lung disease and arthritis should prompt further testing for this condition.

Presence of anti-synthetase antibody is the hallmark of this condition. The most commonly identified is anti Jo- 1, an anti-histidyl-tRNA synthetase[4]. Other myositis-specific antibodies are sometimes sent for excluding other diagnoses. HRCT is required as a routine work up for patient presenting with respiratory signs and symptoms in anti-synthetase syndrome. The most common clinical findings are traction bronchiectasis, ground glass opacities and reticulation[1,3,4].

Lung biopsy is infrequently performed in patients with anti-synthetase syndrome as diagnosis is typically made by analyzing HRCT findings, serological testing, pulmonary function testing, physical examination and patient symptoms[1]. Skin and muscle biopsy may help in understanding severity of disease and the likelihood of response to therapy[1,2].

Other differentials for this diagnosis are rheumatoid arthritis, inflammatory myopathies, systemic sclerosis and systemic lupus erythematosus (SLE) since some features may overlap[3,4]. As age of onset may be similar to these diagnoses, however, each of the systemic rheumatic diseases have their own characteristic and pathognomonic features which differs from each other such as cutaneous manifestations in dermatomyositis, scleroderma and SLE as well as distribution of arthralgia. In general, patients with anti-synthetase syndrome have more pronounced muscle and lung disease.

As for the management of this condition, a multidisciplinary approach is recommended between rheumatologist and respiratory physician. The first line treatment is corticosteroid where it acts as an anti-inflammatory and immunosuppressive agent. However, most patients with this disease require immunosuppressive therapy such as Azathioprine, tacrolimus and cyclophosphamide[1-4].

Patients with anti-synthetase syndrome should be follow-up closely for monitoring progression of the ILD, myositis and other comorbidities associated with it such as pulmonary hypertension and risk of malignancy.[1] The 5-year cumulative survival rate is reported to be 90% for patients with Jo-1 antibody and 75% for non-Jo-1 patients[5]. The most common cause of death is due to pulmonary fibrosis and pulmonary hypertension[1,5]. Hence, physicians should be on high index of suspicion since anti-synthetase syndrome presents in diverse presentation.

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