European Journal of Case Reports in Internal Medicine

Rapidly Progressive Bronchiectasis and Pulmonary Fibrosis in Yellow Nail Syndrome with Possible Association with Selective IgM Deficiency

Mohammad Abu-Abaa[1], Mohamed Hassan[1], Bashar Oudah[2], Noor Al-Ameri[2]
[1] Internal Medicine, Capital Health Regional Medical Center, Trenton, NJ, USA
[2] Eisenhower Health, Rancho Mirage, CA, USA

Doi: 10.12890/2022_003577 - European Journal of Case Reports in Internal Medicine - © EFIM 2022

Received: 09/09/2022
Accepted: 13/09/2022
Published: 27/09/2022

How to cite this article: Abu-Abaa M, Hassan M, Oudah B, Al-Ameri N. Rapidly progressing bronchiectasis and pulmonary fibrosis in yellow nail syndrome with possibile association with selective IgM deficiency. *EJCRIM* 2022;**9**: doi:10.12890/2022_003577.

Conflicts of Interests: The authors declare there are no competing interests.

ABSTRACT

A 67-year-old man with a history of IgM deficiency and pulmonary fibrosis and bronchiectasis was admitted for management of worsening symptoms. Investigations revealed exudative pleural effusion with rapidly progressive bronchiectasis. Although a potential trigger of bronchiectasis and pulmonary fibrosis was not identified despite extensive work-up by several physicians in the past, a bedside observation of yellow dystrophic nails on all extremities revealed the diagnosis. This case report helps to remind clinicians of a rare medical disorder of still uncertain aetiology and no available cure. This case is consistent with a few previous case reports that suggest a potential association with selective immunoglobulin deficiency.

LEARNING POINTS

- Yellow nail syndrome is a rare condition characterized by the classic triad of respiratory, nail and lymphatic involvement.
- Diagnosis remains clinical with no confirmatory tests available; the absence of yellow nails does not preclude the diagnosis.
- An association with selective IgM deficiency has been infrequently reported.

KEYWORDS

Yellow nail syndrome, bronchiectasis, pulmonary fibrosis, lymphoedema

CASE DESCRIPTION

A 67-year-old male patient presented with worsening shortness of breath and productive cough with intermittent febrile episodes. He also complained of a 20-pound unintentional weight loss over the last few months. His medical history was positive for emphysema-type chronic obstructive pulmonary disease (COPD) on 3 litres of home oxygen therapy diagnosed 3 years previously with right upper lobe bullous changes, IgM deficiency on replacement therapy that had been diagnosed 4 years previously after recurrent respiratory tract infections, and hypothyroidism. No history of body implants was noted. He had a negative colonoscopy 4 years previously. He also had a history of smoking and a previous diagnosis of idiopathic pulmonary fibrosis diagnosed a few months earlier where extensive work-up for autoimmune disease was unyielding. In the emergency department, examination showed tachypnoea with a respiratory rate of 30 cycles per minute, bilateral diminished breaths sounds, bilateral diffuse crackles and thin build. Examination also showed dystrophic yellowish nails on all extremities (*Fig. 1*) with no objective fever. Laboratory finding showed only leucocytosis with lymphopenia at 2 (reference 20–53%). A chest x-ray showed worsening bilateral infiltrates and pleural effusion compared with the same study findings 1 month earlier (*Fig. 2*). The patient was started on high-flow oxygen therapy, systemic steroids and bronchodilators, and empiric antibiotic therapy.

European Journal
of Case Reports in
Internal Medicine

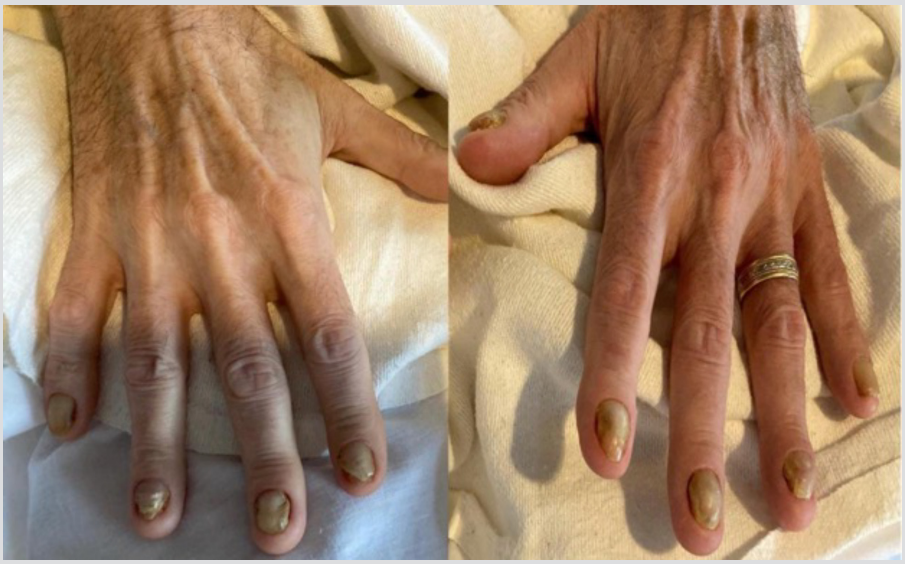

Figure 1. Yellowish dystrophic nails on both hands characteristic of yellow nail syndrome

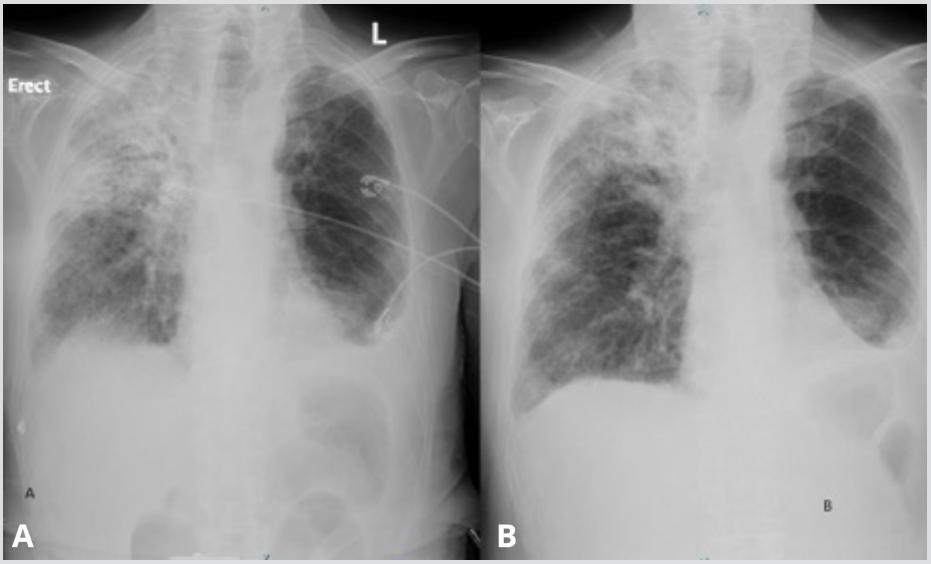

Figure 2. (A) Chest x-ray shows worsening infiltration in the right upper lobe as compared with (B) an x-ray taken only 1 month previously. Transthoracic echocardiography was not suggestive of heart failure

Computed tomography (CT) of the chest showed severe rapid cystic, cavitary and bronchiectatic changes mainly in the right upper lobe with extensive peribronchial thickening and persistent left lower lobe mass-like infiltrate (*Fig. 3*). Infectious work-up was negative. Thoracentesis showed exudative serosanguineous fluid that was negative for malignancy, bacterial and fungal infection, and tuberculosis. Nail clipping and histopathological examination showed no evidence of fungal infection. Mild initial improvement in clinical status was achieved and allowed for bronchoscopy (*Fig. 4)* which showed copious mucoid secretions. Bronchoalveolar lavage (BAL) with transbronchial biopsies were obtained during the procedure. Biopsy was negative but likely inadequate given the lack of observed alveolar macrophages. BAL bacterial culture, silver stain, acid fast bacilli culture and stain were negative. However, fungal culture was positive for *Candida albicans.* BAL analysis showed predominant inflammatory cells, mainly macrophages.

Despite escalation of supportive care, the patient's respiratory status continued to worsen with increased incremental oxygen requirements over 2 weeks of hospitalization. The patient refused aggressive medical intervention. Palliative care discussion prompted consideration of comfort care.

DISCUSSION

Yellow nail syndrome (YNS) is an extremely rare condition and can be diagnosed clinically if the patient has two out of the following three signs: slowly growing yellowish nails, lymphoedema and respiratory tract disease [1]. It mainly affects older individuals over 50 years of age, although cases of YNS in children and even in infants have been described.

European Journal
of Case Reports in
Internal Medicine

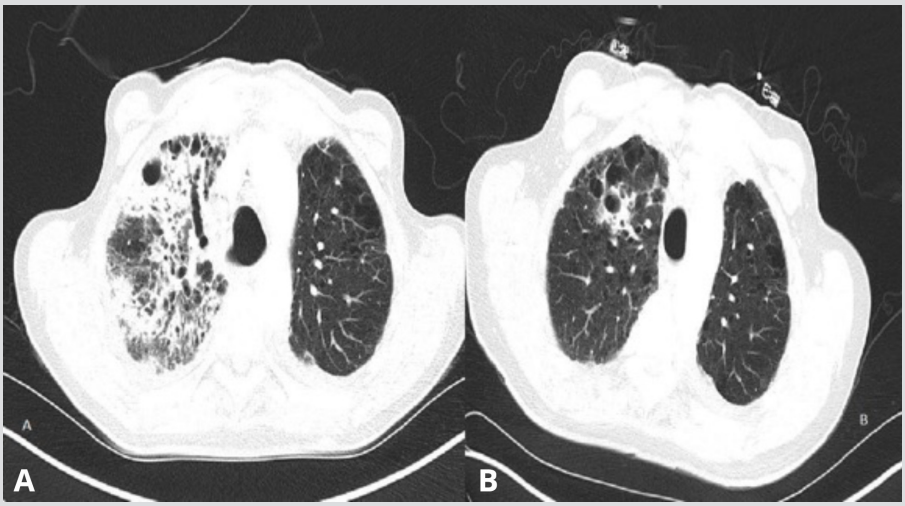

Figure 3. (A) CT of the chest showing progressive cystic, cavitary and bronchiectatic changes predominantly affecting the right upper lobe as compared with (B) a CT scan of the chest taken 1 month previously

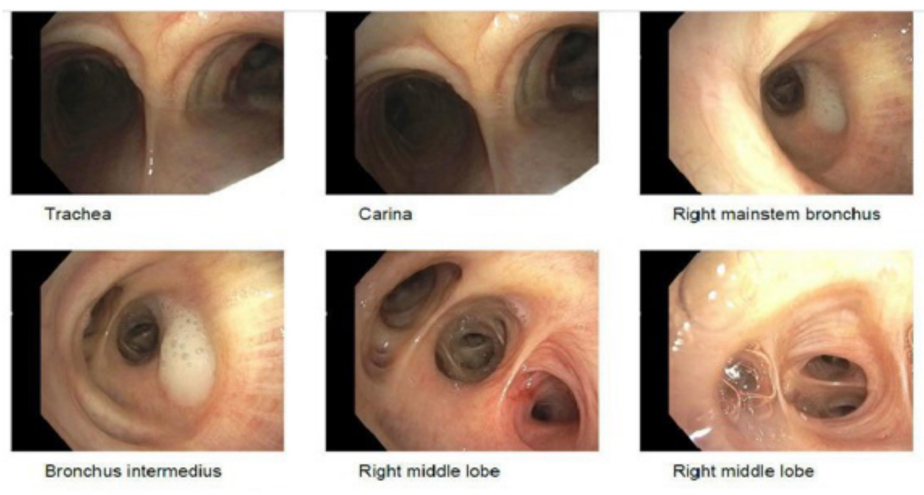

Figure 4. Bronchoscopy images of the trachea and right-sided bronchial airway

It is commonly misdiagnosed as onychomycosis. There is no specific treatment for YNS. The classic triad is present in only 27% of cases. Probably the most striking feature is the yellow nails, but their absence does not preclude the diagnosis. Nail colour can range from transparent to pale yellow to dark green and usually affects all extremities. In our case, the changes were typical and included a thickened nail plate with exaggerated curvature, xanthonychia (yellow discoloration) and scleronychia (hardening of the nail), onycholysis (separation of the nail plate and the nail bed) and slow growth [1]. Nail changes may respond to vitamin E and antifungal treatment even when there is no fungal infection.

The majority of cases are acquired but the condition can also be familial [2]. The exact aetiology remains unclear. It has been suggested that it is likely secondary to lymphatic dysfunction [1]. The theory that YNS is secondary to exposure to titanium is based on the observation of higher titanium levels in affected patients' nails and of improvement in YNS after the removal of titanium body implants. An association with cancers including bronchogenic carcinoma, angiosarcoma and breast cancer, autoimmune diseases and immunodeficiencies has also been described but is based on case reports. A case series of 41 patients failed to confirm these associations [3]. A low IgM level was seen only in two patients. It is suggested that YNS is associated with both T and B cell dysfunction [4]. A few case reports have suggested an association with selective immunoglobulin deficiency [1, 4]. In our case, the absence of a body implant, a negative family history of YNS, negative cancer screening, and negative autoimmune work-up suggest a possible association between YNS and selective IgM deficiency.

The respiratory tract is affected in at least 50% of patients, with chronic cough usually a common symptom. Around 70% of these patients have bilateral pleural effusion which is usually exudative and rich in lymphocytes. Lymphopenia is common in YNS and may reflect lymphocyte migration based on a predominant lymphocyte presence in pleural fluid and biopsy [1]. Interestingly, lung biopsy is not diagnostic. Other chronic respiratory tract manifestations include chronic bronchitis, bronchiectasis, pneumonia and chronic sinusitis [1]. Rarely, apical pulmonary fibrosis with cystic changes is seen, as in our case [5]. The rapid aggressive progression of these changes in our

patient over a 1-month period was striking as bronchiectasis in YNS is thought to be milder than idiopathic bronchiectasis [6]. There is no difference in bacterial colonization between the two conditions and cyclical prophylaxis is used in YNS with bronchiectasis.

REFERENCES

1. Gupta S, Samra D, Yel L, Agrawal S. T and B cell deficiency associated with yellow nail syndrome. *Scand J Immunol* 2012 Mar;**75**(3):329–335. doi: 10.1111/j.1365-3083.2011.02653.x
2. Douri T. Yellow nails syndrome in two siblings. *Dermatol Online J* 2008 Sep 15;**14**(9):7. PMID: 19061589.
3. Maldonado F, Tazelaar HD, Wang C-W, Ryu JH. Yellow nail syndrome: analysis of 41 consecutive patients. *Chest* 2008;**134**:375–381.
4. Bokszezannin A, Levinson AL. Coexistent yellow nail syndrome and selective antibody deficiency. *Ann Allergy Asthma Immunol* 2003;**91**:496–500.
5. Vignes S, Baran R. Yellow nail syndrome: a review. *Orphanet J Rare Dis* 2017;**12**(1):42. https://doi.org/10.1186/s13023-017-0594-4
6. Woodfield G, Nisbet M, Jacob J, Mok W, Loebinger MR, Hansell DM, et al. Bronchiectasis in yellow nail syndrome. *Respirology* 2017 Jan;**22**(1):101–107.