



Case Report

Yellow Nail Syndrome in Black: A Diagnostic Challenge!

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Introduction

Yellow nail syndrome is a rare disease whose first case was described by Samman in 1964 [1]. There was evidence of a change in color and nail dystrophy associated with ankle edema. The presence of associated effusion was described in case series a few years later [2,3]. Other respiratory disorders were described later; the most common are chronic rhino-sinusitis, recurrent pneumonitis, bronchiectasis, pulmonary infiltrates and fluid pleural effusions [4,5].

The syndrome is of unknown cause but may be paraneoplastic or associated with an autoimmune disease [4]. Involvement of the lymphatic vessels has been evoked in the pathophysiological mechanism.

The cases described in the literature, concern people of fair skin (Caucasian and Asian). To date, no cases have been reported in the black population. The detection of yellow nail coloration can be difficult in black subjects causing a delay in diagnosis or even diagnostic errors.

We report the case of a black patient with a picture suggestive of yellow nail syndrome.

Case Report

A 63-year-old woman was hospitalized in 2010 in the pulmonology department following an intensive care hospitalization for acute severe asthma. This retired nurse, reported a notion of asthma evolving for twenty years, associated with chronic rhino sinusitis and eczema. Pulmonary abnormalities such as bronchiectasis was diagnosed 2 years ago. She had no smoking story. Treatment included Budesonide/Formoterol 400 mcg/12mcg. Total IgE was 822 IU/ml. Given the lack of asthma control with intensive care stay in a patient treated with corticosteroids inhaled at maximum dose, a diagnosis of severe asthma was retained. In this context, treatment with Omalizumab was introduced. At 3 months from the onset of this treatment, there is the appearance of a green coloration of the nails, yellow of the toes associated with non-gradient edema of the lower limbs. This clinical picture motivated the discontinuation of treatment with Omalizumab (Figure 1).



Figure 1: Discoloration and alteration of nails with dystrophy and thickening.

This clinical picture persisted and worsened despite the discontinuation of treatment.

In 2015, 5 years after the onset of the nail abnormalities, the patient again experienced a worsening of dyspnea. The chest CT scan showed a bilateral pleural effusion predominant on the right (Figure 2).

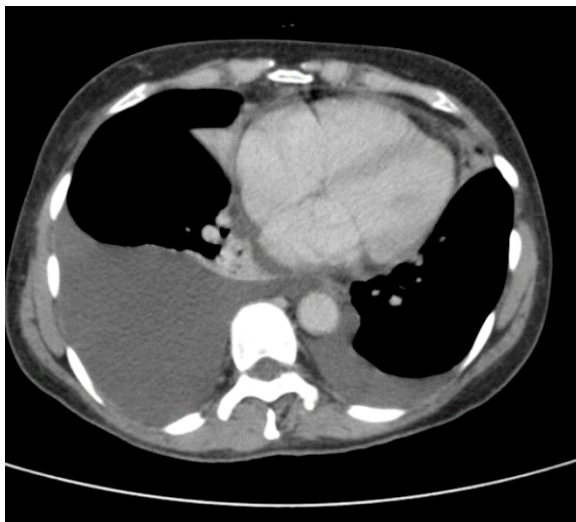


Figure 2: Initial scan April 2015 showing bilateral pleural effusion.

Biologically, there was a normal complete blood count, urea at 6.2 mmol/L, creatinine at 79 μ mol/L, CRP at 0.2 mg/L. Protein electrophoresis showed a polyclonal increase in gamma globulins to 20.4 g/L (N: 8-13.5). Total protein was 58 g/L. Total IgE was 454 IU/ml. Aspergillus serology was negative. The autoimmune assessment found normal levels of anti-nuclear antibodies, rheumatoid factors, anti-CCP antibodies and ANCA.

The Quantiferon-TB[®] Gold (QTF-G) test was negative.

The analysis of pleural liquid showed a lymphocytic exudate with 39 g/L of proteins and LDH at 1305 IU/L, 1250 leukocytes/mm³ with 78% of lymphocytes, 2% of neutrophils, 2% of eosinophilic polynuclear and 18% of mesothelial cells.

Histological examination of the pleural biopsy reported fibro-inflammatory rearrangements predominantly lymphocytic cells without any suspected of malignancy cells.

The search for a paraneoplastic etiology by mammography and thoracic and abdominopelvic CT scan was negative. The bronchial fibroscopy found mucopurulent secretions with a negative the bacteriological, mycological and mycobacteriological exams.

Respiratory functional explorations found a non-reversible obstructive ventilatory disorder with FEV1 at 45% of the theoretical value associated with chest distension.

Arterial blood gas found pH at 7.42, PaCO₂ at 47 mmHg, PaO₂ at 91 mmHg and bicarbonates at 30 mmol/L. With the clinical picture associating lymphedema, bronchiectasis, bilateral pleural effusion, and a yellow-green coloration of the nails, a diagnosis of yellow nail syndrome was retained.

Evolution Over 7 Years of Follow-Up

At the pulmonary level, there are recurrent pleural effusions (Figures 3 and 4) treated by iterative thoracentesis. Examination of pleural fluid always reported lymphocytic exudate without bacteriological or mycobacteriological abnormality. Follow-up chest CT scans showed the appearance of pulmonary infiltrates with sub pleural condensations of the middle and lower left lobe (Figure 4).

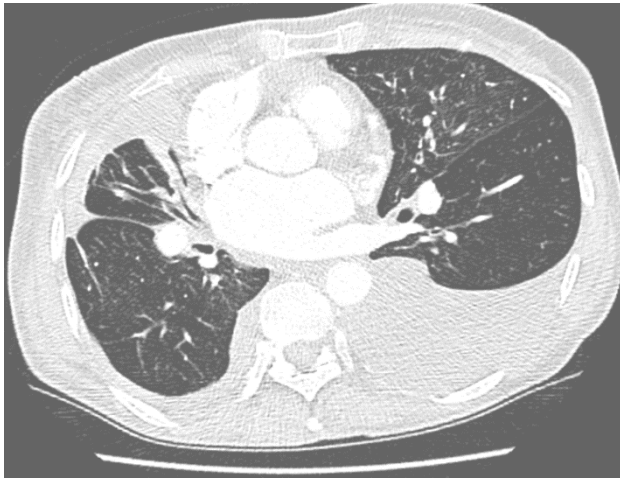


Figure 3: Chest scan December 2018 showing left pleural effusion and bronchial dilatations.



Figure 4: February 2022 scan showing bilateral pleural effusion, pleural thickening and subpleural condensation.

In the absence of specific treatment, the patient gradually worsened her chronic obstructive respiratory failure, which required the implementation of home non-invasive nocturnal ventilation and long-term oxygen therapy. Bronchially, she experienced several exacerbations with *Pseudomonas aeruginosa* colonization.

On the cardiac level, we note the appearance of pulmonary arterial hypertension at cardiac ultrasound in 2021. The right cardiac catheterization found pre-capillary pulmonary arterial hypertension with an average PAP at 32 mmHg and a post-capillary pressure at 7 mmHg. Cardiac output was within normal at 4.63 l/min (110% of theoretical) and cardiac index at 2.9 l/min/m².

Dermatologically, no improvement in nail involvement was noted despite a treatment with Itraconazole 400mg/day one week per month for 6 months. Lymphedema persisted and onycholysis increased.

She currently has chronic hypercapnic respiratory failure. It benefits from iterative pleural punctures in the absence of pulmonary re-expansion that does not allow to consider a pleural symphysis.

Discussion

We report on the first case of yellow nail syndrome described in a black subject. Our patient had a yellow coloration (xanthonychia) of the toenails and green (chloronychia) of the hands with thickening (subungual hyperkeratosis) and on some a nail curve (hyper curvature) and lateral onycholysis then distal leading to their virtual disappearance (photo),” associated with bilateral lymphedema of the lower extremities, chronic rhino sinusitis, and pleural and bronchial involvement. This clinical picture constitutes the complete triad of yellow nail syndrome. This unusual staining certainly contributed to the diagnostic delay until the appearance of pleural effusion. The picture has evolved into chronic obstructive respiratory failure.

Yellow nail syndrome is a rare disease with fewer than 400 cases described in the literature [4]. Prevalence is estimated at 1 case per 1 million inhabitants [4].

The first case of yellow nail syndrome was described by Heller in 1927 but the syndrome was first described by Samman in 1964 in a series of cases with nail abnormalities and ankle edema [1]. Respiratory manifestations were subsequently described with pleuro pulmonary involvement in half of the cases. At the respiratory level, we have been described as rhino sinus involvement, fluid pleural effusions, dilation of the bronchi and pulmonary infiltrates [4,6,7] as is the case in our patient. Cases of pericardial involvement have also been described [8]. Not all symptoms may be present in patients, which may delay diagnosis. The complete triad is found in 27 to 76% of the series [4]. The cause remains unknown but lymphatic anomalies are very often found in patients [1,9]. This syndrome is often associated with various pathologies: neoplasia, autoimmune disease, metabolic diseases, infectious diseases or iatrogenic etiologies [10].

There is no therapeutic consensus to date. Management is etiological when a cause is found, otherwise it is symptomatic. Efficacy of vitamin E supplementation and azole treatment has been reported in some cases [11].

No case has been reported to date in black subject or associated with asthma.

Conclusion

We report the first case of yellow nail syndrome in a black subject. Nail staining abnormalities are more complex to determine in black subjects in whom melanonychia are common. This may be a cause of delayed diagnosis in these patients compared to Caucasian patients.

Declarations: Ethics approval and consent to participate: patient gives consent to participate to this study.

Consent for Publication: Patient gives written consent for publication.

Competing Interests: Authors declare no competing interests.

Authors' Contributions: AM: analyzed, interpreted the patient data and wrote this manuscript; IJ: performed cardiac exams and was contributor in writing this manuscript; AE: performed skin exam and was contributor in writing this manuscript; DC: interpreted the patient data and was contributor in writing this manuscript; LSF: analyzed and interpreted patient data and was contributor in writing this manuscript. All authors read and approved the final manuscript.

Availability of Data and Materials: The datasets during and/or analyzed during the current study available from the corresponding author on reasonable request.

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