

# Childhood pulmonary tuberculosis with digital clubbing

**Ibrahim Aliyu,  
Zainab Ibrahim<sup>1</sup>**

*Department of Paediatrics, Aminu  
Kano Teaching Hospital, Bayero  
University Kano, <sup>1</sup>Department of  
Nursing, Aminu Kano Teaching  
Hospital, Kano, Nigeria*

## Abstract

Tuberculosis is prevalent in the tropics and sub-tropics; late treatment may result in severe morbidity and mortality. Digital clubbing has been associated with several diseases including pulmonary tuberculosis though the exact mechanism is poorly understood; this has been linked mostly with severe adult pulmonary tuberculosis associated with cavitations, hypoalbuminemia and smear-positive sputum, but the case of an 11-year-old boy who presented with digital clubbing and leukonychia with absence of cavitory lesion or hypoalbuminemia is reported.

**Key words:** Cavitations, digital clubbing, hypoalbuminemia, leukonychia, pulmonary tuberculosis

## INTRODUCTION

Pulmonary tuberculosis is still prevalent in Africa and Asia. If not well treated it may result in complications such as empyema thoracis and pulmonary fibrosis. In the tropics and sub-tropics where tuberculosis is rife it is important to exclude this in all chronic chest infection; as it has been implicated in 26.9% of cases of adult pleural space infection in Zaria, northern Nigeria.<sup>[1]</sup> The prevalence in children is varied; cases as low as 8.3%<sup>[2]</sup> were reported in Enugu and as high as 40% in children in Uyo, Southern Nigeria had been reported.<sup>[3]</sup>

Chronic chest infection may be associated with lung collapse arising from extensive fibrosis; however its association with digital clubbing and leukonychia is a rare event. The relationship between pulmonary tuberculosis and digital clubbing is poorly understood; however it has been seen mostly in those with severe adult disease associated with cavitations, hypoalbuminemia and malnutrition. Therefore, the case of an 11-year-old boy who had digital clubbing

with leukonychia in the absence of hypoalbuminemia is reported.

## CASE REPORT

An 11-year-old boy presented with cough easy fatigability for a year. This started with complaint of fever, difficulty in breathing; the fever subsided after series of antibiotics he had in a primary health-care center, but the cough persisted with associated limitation of physical activity. Two months before presentation, the parents noticed whitening of the fingernails with clubbing. He was not immunized for age, was not an asthmatic, and he had no contact with a coughing patient. He had grade 3 clubbed digits with leukonychia [Figure 1]; he was not cyanosed, and the cardiovascular examination was not remarkable; the respiratory rate was 20/min, the anterior right hemi-thorax was depressed compared to the left side [Figure 2]; the trachea and cardiac apex were shifted to the right, and he had dull percussion note on the right anterior thoracic with reduced breath sounds. His full blood count was not remarkable, similarly the human immunodeficiency viral test, liver function test and serum protein, renal function test were essentially normal; but the chest X-ray showed homogenous opacification of the right hemi-thorax while the right lateral view showed evidence of parenchymal involvement but no cavity was seen [Figure 3]. The mantoux test was 11 mm, and blood culture test was negative; antinuclear antibody test and rheumatoid factor were

### Access this article online

#### Quick Response Code:



**Website:**  
[www.sudanmedicalmonitor.org](http://www.sudanmedicalmonitor.org)

**DOI:**  
10.4103/1858-5000.157510

### Address for correspondence:

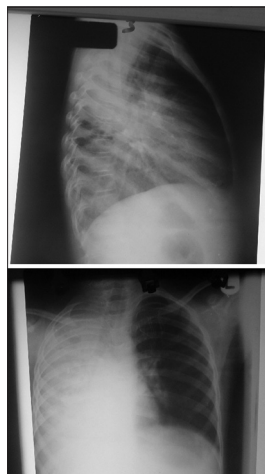
Dr. Ibrahim Aliyu, Department of Paediatrics, Aminu Kano Teaching Hospital, Kano, Nigeria. E-mail-ibrahimaliyu2006@yahoo.com



**Figure 1:** Presence of digital clubbing



**Figure 2:** Depressed right hemi-thorax; also showing leukonychia of fingernails



**Figure 3:** Chest X-ray showing opacified right hemi-thorax with mediastinal shift to the right

not remarkable; however chest computer tomography or magnetic resonance was not done. He had been on antituberculosis therapy for 5month before presentation but without any improvement. In view of the absence of cardiothoracic service in the health facility, he was referred to the nearest tertiary center for further care.

## DISCUSSION

Digital clubbing had been associated with some chronic infections such as tuberculosis and human immunodeficiency virus, gastrointestinal disorders, congenital heart disease, chronic lung disease and neoplasia.<sup>[4]</sup> The exact mechanism is not completely understood, but the most plausible theory is that proposed by Dickinson and Martin<sup>[5]</sup> which associates it with the release of platelet-derived growth factor, however Atkinson and Fox<sup>[6]</sup> in their study reported the role of vascular endothelial-derived growth factor; but these do not explain the mechanism in all cases of clubbing.

How pulmonary tuberculosis causes clubbing is not clear; it was first reported far back in 1915.<sup>[7]</sup> Several reports have associated it with adult pulmonary tuberculosis with varying prevalence ranging from 30%<sup>[8]</sup> to 82% in an Indian study.<sup>[9]</sup> It was seen mostly in those with active pulmonary tuberculosis-smear positive with cavities which was not the case in the index case; possibly the antituberculosis therapy he had might have contained the infection and what we saw were the aftermath of tissue destruction. Why the index case developed leukonychia is not clear, though it has also been associated with tuberculosis among adults<sup>[10]</sup> and cannot be explained by hypoalbuminemia alone which has been associated with severe forms of tuberculosis which was absent in the index case. Our findings were similar to that of Ddungu *et al.*,<sup>[11]</sup> therefore digital clubbing and leukonychia can occur in tuberculosis patient in the absence of hypoalbuminemia.

## CONCLUSION

Digital clubbing may occur in childhood pulmonary tuberculosis, and it may also be associated with leukonychia even in the absence of hypoalbuminemia and cavitations.

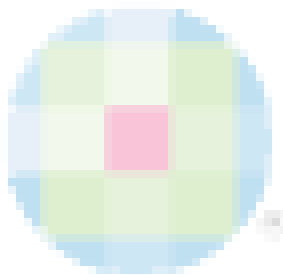
## REFERENCES

1. Edaigbini SA, Delia IZ, Aminu MB, Anumenechi N, Audu SS. Empyema thoracis in Zaria; a preliminary report. *Niger J Surg* 2011;17:82-6.
2. Anyanwu CH, Egbue M. Management of pleural sepsis in Nigerian children. *Thorax* 1981;36:282-5.
3. Ekpe EE, Akpan MU. Outcome of tube thoracostomy in paediatric non-traumatic pleural fluid collections. *Afr J Paediatr Surg* 2013;10:122-6.
4. Sarkar M, Mahesh DM, Madabhavi I. Digital clubbing. *Lung India* 2012;29:354-62.
5. Dickinson CJ, Martin JF. Megakaryocytes and platelet clumps as the cause of finger clubbing. *Lancet* 1987;2:1434-5.
6. Atkinson S, Fox SB. Vascular endothelial growth factor (VEGF)-A and platelet-derived growth factor (PDGF) play a central role in the pathogenesis of digital clubbing. *J Pathol* 2004;203:721-8.
7. Locke EA. Secondary hypertrophic osteo-arthritis and its relation to simple club-fingers. *Arch Intern Med* 1915;15:659-713.
8. Reeve PA, Harries AD, Nkhoma WA, Nyangulu DS, Wirima JJ.

- Clubbing in African patients with pulmonary tuberculosis. *Thorax* 1987;42:986-7.
9. Khanna BK, Khare KS. Clubbing in pulmonary tuberculosis. *Indian J Tuberc* 1986;33:11.
  10. Mautner GH, Lu I, Ort RJ, Grossman ME. Transverse leukonychia with systemic infection. *Cutis* 2000;65:318-20.
  11. Ddungu H, Johnson JL, Smieja M, Mayanja-Kizza H. Digital clubbing in tuberculosis – Relationship to HIV infection, extent of disease and hypoalbuminemia. *BMC Infect Dis* 2006;6:45.

**How to cite this article:** Aliyu I, Ibrahim Z. Childhood pulmonary tuberculosis with digital clubbing. *Sudan Med Monit* 2015;10:31-4.

**Source of Support:** Nil. **Conflict of Interest:** None declared.



Since 1999 Medknow has been pioneering open access publishing and we are one of the largest open access publishers in the world, publishing more than 340 journals and having partnerships with over 300 associations and societies.



## ABOUT MEDKNOW

- We use a professional, online manuscript management system called the Journal on Web (JOW)
- Journals published with Medknow are indexed for searching on Ovid®, a major platform hosting medical books, journals and databases, making them immediately discoverable by a wide population of international medical and scientific professionals
- Our dedicated publishing team will provide help and advice to increase the penetration of your journal and to advance its recognition internationally on best practice
- Membership is managed online, and we provide efficient logistic and distribution management
- Our system provides full support and compatibility for different files (including images and videos) in multiple formats
- We provide excellent customer service to guide you through the publishing process

For more information visit [medknow.com](http://medknow.com)