

## Tuberculosis with Pulmonary Cavitations in Two Siblings of Internally Displaced Couple– A Case Report

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**Abstract:** Tuberculosis (TB) in children is a significant cause of morbidity and mortality. Occurrence of cavitary tuberculosis in children is not very common and is associated with greater degree of infectiousness. We report a 6 year old girl and 10 months old boy both from internally displaced couple and they presented to the Medical Centre with chronic cough, fever, chest pain, difficulty in breathing and weight loss. Their chests X-rays have revealed multiple cavitary lesions and were being managed with anti TB drugs. However, the older sibling died after 11 days of commencement of anti TB while the parents absconded with the younger child due to the death of the elder sibling. Pulmonary cavitary tuberculosis, though not very common in children, may still occur, especially in the immunocompromised like the malnourished and overcrowded internally displaced population. It is worthwhile to note the occurrence of pulmonary cavitary TB in children in an internally displaced setting like this as this may lead high TB infection and transmission rate as a result of overcrowding. An effective TB surveillance system in this setting is, therefore, needed to reduce the burden of TB in crowded population.

**Key words:** Internally displaced couple, siblings, cavitary tuberculosis

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### I. Introduction

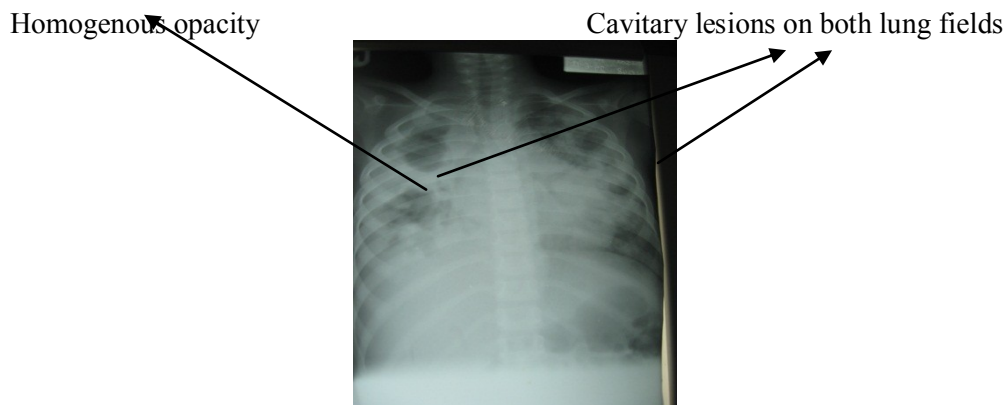
Children suffer from tuberculosis-related morbidity and mortality, particularly in endemic areas like Nigeria. Pulmonary cavitary tuberculosis, adult type tuberculosis, in children is rare and infectious condition.<sup>1</sup> Pulmonary tuberculosis in children presenting as cavity is a problem because it acts as a source of infection (which is responsible for the persistence of the disease in the community) and is often non-responsive to therapy [1]. This condition is still seen in areas of high TB prevalence like India due to infection with resistant bacilli [1]. Children contribute a substantial proportion of the global tuberculosis burden with the prevalence ranging from 11% to 13.7% [2]. There has been a resurgence of childhood tuberculosis cases due to HIV pandemic, lack of case reporting, contact tracing, screening, use of preventive chemotherapy, and poor nutrition [3]. We present this uncommon condition in two siblings who were from internally displaced couple due to insecurity as this can lead to increased burden of tuberculosis in children.

### II. Case Presentation

#### 2.1. CASE 1

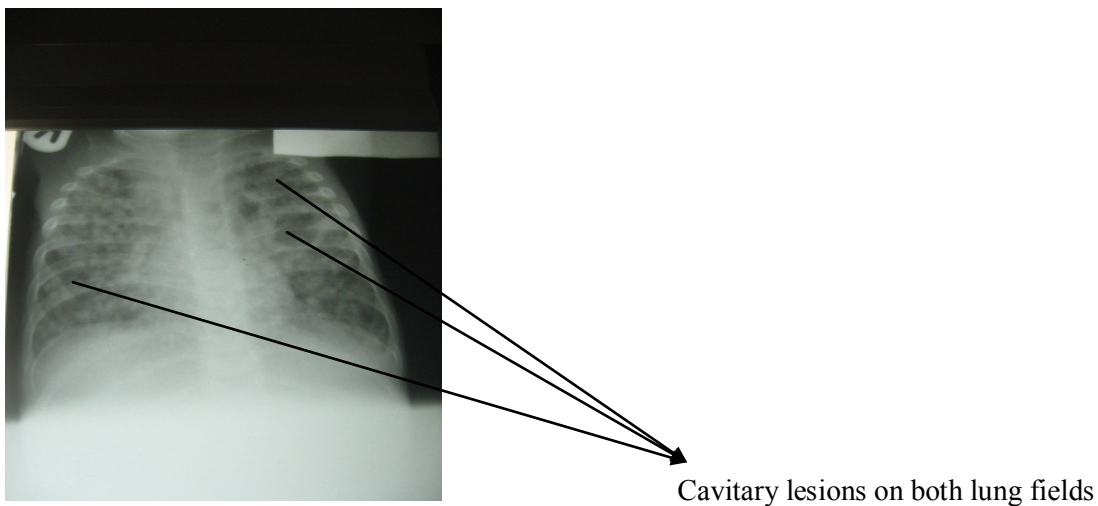
A 6 year-old girl presented with chronic cough, low grade continuous fever, and weight loss for two months duration. Cough was non paroxysmal, non-whooping and there was associated difficulty in breathing and refusal to feed. There was no history of contact with a chronically coughing adult and she was not given BCG vaccine. The child was the 5<sup>th</sup> of seven children in the family. Mother is full time house wife while the father is a peasant farmer. The youngest brother (10 months old) was also on admission for tuberculosis. On examination she was found to be chronically ill, afebrile (36.6°C), wasted (weight of 75% of expected) and stunted (length was 84% of expected) with significant peripheral lymphadenopathy. She was tachypnoeic (respiratory rate of 48 cycles/ minutes) and dyspnoeic, the trachea was central, with dull percussion notes on the right middle and lower zones, with reduced breath sound intensity bilaterally, bronchial breath sounds and bilateral widespread coarse crepitations. Other systemic examination findings were normal. The patient was managed as a case of pulmonary tuberculosis. She was commenced on anti tuberculous drugs. Chest X-ray revealed multiple cavitary lesions with near homogeneous opacity on both the lung fields (Fig.1). Sputum and pleural pus AFB were negative and mantoux test non-reactive. Total WBC count was  $29.1 \times 10^3 / \mu\text{L}$ , Lymphocytes was 11.1%, neutrophils was 85.4%, PCV was 26% and ESR was 101 mm/ hour. Serum electrolytes urea and creatinine were within normal limits. Human immunodeficiency virus screening was non-reactive. She was commenced on anti tuberculous drugs and patient died after 13 days of admission but 11 days of commencement of anti tuberculous drugs.

**Figure I: A chest radiograph of a 6-year old girl showing cavitary lesion on both lung fields**



## 2.2. CASE 2

A 10 months old boy presented with low grade, continuous fever and cough for six weeks duration and refusal to feed for three weeks duration. Cough was non paroxysmal, non-whooping with associated contact with six-year old chronically coughing elder sibling. There was associated weight loss and refusal to feed and he was not given BCG vaccine. There was poor nutritional history and developmental milestones regressed. Pregnancy, delivery and neonatal period were uneventful. Child was the 7<sup>th</sup> of the seven children from internally displaced family. Mother was a full-time house wife while father was a peasant farmer. The elder sibling was also on admission and being managed for pulmonary tuberculosis but died after 13 days of admission but 11 days of commencement of anti-tuberculous treatment. On examination he was found to be chronically ill, febrile (38.8°C), wasted (weight of 52% of expected) and stunted (length was 86% of expected) with significant peripheral lymphadenopathy. He was tachypnoeic (respiratory rate of 52 cycles/ minutes) and dyspnoeic, trachea was central, with vesicular breath sounds and widespread coarse crepitations. Other systemic examination findings were normal. He was commenced on anti tuberculous drugs based on score chart for the diagnosis of TB in children prepared by Federal Ministry of Health and chest X-ray findings which revealed cavitary lesions with areas of opacities on both the left lung fields (fig. II). Early morning gastric aspirate Acid Fast Baccilli was negative and Mantoux test non-reactive. Total White Blood Cell count was  $11.4 \times 10^3 / \mu\text{L}$ , lymphocytes was 31.3%, neutrophils was 61.1%, Hb was 5.5 g/ dl and ESR was 43 mm/ hour. Serum electrolytes, urea and creatinine were within normal limits. Human immunodeficiency virus screening was non-reactive. Mother absconded with him due to the death of the elder sib who was also being treated for TB 11 days after commencement of anti TB drugs.



**Figure II: A chest Radiograph of a 10-months old boy showing multiple cavitary lesions on both lung fields**

### III. Discussion

Childhood tuberculosis is one of the global causes of morbidity and mortality especially in endemic areas like Nigeria. Immunodeficiency from any cause may lead to reactivation of primary tuberculosis in children. Increased international travel and migration have threatened to facilitate the emergence and spread of multi-drug resistance TB strains [4]. Some studies also revealed that there is a risk for TB infection among internally displaced persons [5]. Our cases were from internally displaced couple and this might lead to the emergence and spread of multi-drug resistance TB in that community. The vast majority of children in endemic areas become infected after 2 to 3 years of age [3]. The first case of this case report may belong to the few that progressed to disease or both cases may have immune-suppression since they have poor nutritional status which might have predisposed them to having progressive disease.

Cavitary disease is not a very common finding in children with pulmonary tuberculosis. Ahidjo *et al* [6] reported that out of 125 children with pulmonary TB 9 were found to be having cavitary lesions given a prevalence of 7.2%. However, cavitary disease in children may result from poor containment at the site of organism deposition in a very young and/or immune-compromised children, aspiration of live bacilli when a diseased lymph node erupts into an airway, among those less than 5 years of age, and the third being the adult-type disease found mainly in children greater than 10 years of age [7]. Both cases presented here may have developed cavitary disease due to one of these reasons. Both cases presented here had, in addition to pulmonary cavitary lesions, extrapulmonary manifestations (lymphatic disease) as about 25 – 35% of children with TB have extrapulmonary presentation [8]. The very young nature of the second case and the fact that our cases may be immune-compromised from malnutrition could explain why the two cases presented with disseminated disease as documented in the literature [9].

The paucibacillary nature of childhood TB and poor bacteriologic yields coupled with the fact that sputum smear microscopy is positive in less than 10 to 15% of children with probable TB makes the diagnosis of childhood tuberculosis challenging [10]. This was in keeping with the finding in these cases as none of them yielded positive results after microbiologic investigations and our diagnosis for these cases was based on the WHO clinical scoring system [11]. Treatment of childhood tuberculosis still remains the use of anti-tuberculous drugs, adequate counseling and contact tracing. However, these cases were commenced on anti-tuberculous drugs, counseled but contact tracing could not be done because their parents absconded following the demise of the older sibling and they are internally displaced family secondary to the security challenges in Nigeria.

### IV. Conclusion

Pulmonary cavitary tuberculosis, though rare in childhood, may still occur, especially in the immunocompromised like the malnourished and internally displaced persons. This is because the crowded living conditions of this population can be associated with greater degree of TB transmission and higher organism burden. Coexisting poor nutritional status of children can also weaken their immune system and make them more vulnerable to developing active TB. It is however difficult to diagnose TB in children due to limitations in the investigations especially in the developing country like ours and the diagnosis is usually clinical. Since these cases occurred in siblings of internally displaced couple, it is imperative to consider the occurrence of progressive TB (adult type of TB) in children in any given setting like this.

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