The silent endemic: Diagnostic challenges of asymptomatic smear negative paediatric pulmonary tuberculosis in non-citizen populations in Sabah

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ABSTRACT

Introduction: Smear negative pulmonary tuberculosis (PTB) in children poses a significant global health challenge due to diagnostic difficulties and under-reporting. Worldwide, children account for approximately 10% of PTB cases, with smear negative cases often predominant due to paucibacillary disease and challenges in obtaining sputum samples. In Sabah, Malaysia, where the incidence of PTB is relatively high at 128 cases per 100,000 population, individuals under the age of 15 comprise only 4.6% of reported cases. Notably, approximately 35% of these cases are classified as smear negative PTB. Limited access to advanced diagnostics, socioeconomic disparities, and high-risk settings contribute to underdiagnosis. Case Description: A 5-year-old non-Malaysian girl, with no significant past medical history or prior hospitalisations, presented to Klinik Kesihatan (KK) Tawau, Sabah, for contact tracing following her sister's diagnosis of PTB. Despite being asymptomatic for PTB, she presented with a notably absent BCG scar, though her parents claimed immunization at birth. Clinical examination revealed an active child with stable vital signs, clear lung fields, and no palpable cervical lymphadenopathy while her growth was maintained at the 50th centile. Laboratory investigations were largely unremarkable, apart from a high erythrocyte sedimentation rate (ESR) and a strongly positive Mantoux test, which was 15 mm induration. Chest radiograph demonstrated right perihilar haziness with lymph node enlargement. Following a multidisciplinary discussion between the TB team of KK Tawau, led by a Family Medicine Specialist and a Paediatric Infectious Disease physician, the case was diagnosed and managed as smear negative PTB, highlighting the challenges of paediatric TB diagnosis in endemic settings. **Discussion:** The presented case illustrates the formidable challenges in diagnosing and managing smear negative PTB in children. The paucibacillary nature of paediatric PTB, compounded by difficulties in obtaining diagnostic samples from young children, often results in asymptomatic or non-specific presentations, as seen in this 5-year-old. Her positive Mantoux test and suggestive chest X-ray findings were crucial, yet non-definitive, underscoring the reliance on a combination of clinical suspicion, contact history, and ancillary investigations. The absence of a BCG scar, despite reported immunization, highlights potential gaps in vaccination records, particularly relevant in mobile or non-citizen populations, which are frequently seen in Sabah. In resource-limited settings where advanced diagnostic tools may not be readily available, clinicians must depend on a combination of epidemiological risk, clinical suspicion, and radiological findings. Managing such cases requires a multidisciplinary approach and close monitoring, particularly among non-citizen children who may face barriers to healthcare access and continuity of care. **Conclusion:** The case underscores the inherent difficulty in diagnosing smear negative paediatric PTB, especially in settings with non-citizen populations in Sabah. Despite being asymptomatic, a strong contact history, positive Mantoux, and suggestive chest X-ray were pivotal. The multidisciplinary team's consensus was essential, as definitive microbiological confirmation is often elusive. This highlights the critical need for integrated clinical judgement, epidemiological links, and radiological evidence for timely diagnosis and management of childhood PTB in high-burden areas like Sabah.

Keywords: Pulmonary tuberculosis, smear negative, paediatric, Sabah