Mycobacterial Diseases
ISSN: 2161-1068
OPEN ACCESS Freely available online
Perspective

Long-Term Respiratory Health After Paediatric Tuberculosis

Korni Avdien*

Department of Immunobiology and Biomedicine, Sirius University of Science and Technology, Sochi, Russia

DESCRIPTION

Paediatric post-Tuberculosis Lung Disease (PTLD) represents a significant yet often under-recognized public health challenge, particularly in regions with high Tuberculosis (TB) prevalence. Despite effective treatment for TB, many children experience residual pulmonary damage that impacts their quality of life and long-term respiratory health. Understanding the prevalence and imaging patterns of paediatric PTLD is essential for improving diagnosis, management, and prevention strategies. Tuberculosis remains one of the leading infectious diseases worldwide, with children accounting for a substantial proportion of cases, especially in low-income and middle-income countries. Even with appropriate anti-TB therapy, structural and functional abnormalities may persist, leading to PTLD. The prevalence of PTLD in paediatric populations varies across studies, reflecting differences in TB burden, healthcare access, and follow-up practices. Studies estimate that 20%-50% of children treated for pulmonary TB develop some form of post-TB lung disease. This wide range is influenced by factors such as the severity of the initial disease, delayed diagnosis or treatment, and coexisting conditions like malnutrition or HIV infection. Additionally, children with severe or recurrent TB are at higher risk of developing long-term lung damage. In many cases, paediatric PTLD goes undiagnosed or unreported, as symptoms such as chronic cough, dyspnoea, or recurrent respiratory infections are often attributed to other causes. Moreover, in resource-limited settings, access to advanced imaging and pulmonary function testing may be limited, hindering comprehensive assessment.

Imaging in paediatric PTLD

Imaging is a base in diagnosing and characterizing PTLD. Post-treatment imaging provides valuable insights into the structural damage caused by TB, helping clinicians assess the extent of lung injury and guide management. Common imaging modalities used in paediatric PTLD include chest X-rays and Computed Tomography (CT) scans. Chest X-rays are the most widely used imaging tool for evaluating paediatric PTLD due to their availability, cost-effectiveness, and ease of use. Common findings include, fibrotic changes, visible as linear or irregular opacities, are among the most frequent sequelae of TB. Dilatation and destruction of the bronchial walls can be observed, particularly in children with recurrent or untreated infections. Residual pleural involvement, often following pleural effusion or empyema, may lead to pleural thickening and restrict lung expansion. Healed granulomas or lymph nodes may calcify, appearing as dense, localized opacities. Collapse of lung segments, often associated with airway obstruction or scarring, is a common feature. While chest X-rays are helpful for initial assessment, their sensitivity in detecting subtle or complex abnormalities is limited. High-Resolution Computed Tomography (HRCT) offers superior detail, making it invaluable for detecting and characterizing lung damage in PTLD. Common CT findings include, persistent or healed cavities may be visible, particularly in cases of severe TB. Bronchiectasis and bronchiolitis obliterans are frequently identified, reflecting chronic airway damage. Patchy areas of decreased lung density can indicate air trapping or ventilation-perfusion mismatch. Fibrosis, interlobular septal thickening, and other interstitial abnormalities are feature of chronic TB sequelae. In severe cases, signs of pulmonary hypertension, such as right ventricular hypertrophy, may be evident. While CT scans are more informative, their higher cost, limited availability, and radiation exposure are significant considerations, particularly in paediatric populations.

Patterns of imaging findings in PTLD

The imaging patterns in paediatric PTLD often vary depending on the severity and duration of the initial TB infection, the child's immune status, and the timing of diagnosis and treatment. Common patterns include, focal scarring, often in the upper lobes, is a feature of TB sequelae. Bronchiectasis and air trapping are more prevalent in children with prolonged or untreated TB. Many children exhibit a combination of findings, such as fibrosis with pleural thickening or bronchiectasis with cavitation. Enlarged or calcified mediastinal lymph nodes may persist after treatment. The structural abnormalities seen on imaging have significant implications for children's respiratory

Correspondence to: Korni Avdien, Department of Immunobiology and Biomedicine, Sirius University of Science and Technology, Sochi, Russia, Email: koriavid20@outlook.com

Received: 25-Nov-2024, Manuscript No. MDTL-24-35984; **Editor assigned:** 27-Nov-2024, Pre QC No. MDTL-24-35984 (PQ); **Reviewed:** 11-Dec-2024, QC No. MDTL-24-35984; **Revised:** 18-Dec-2024, Manuscript No. MDTL-24-35984 (R); **Published:** 24-Dec-2024, DOI: 10.35248/2161-1068.24.14.530

Citation: Avdien K (2024). Long-Term Respiratory Health After Paediatric Tuberculosis. Mycobact Dis. 14:530.

health. PTLD can result in chronic symptoms such as persistent cough, reduced exercise tolerance, and frequent respiratory infections. Over time, these complications may progress to chronic respiratory failure or pulmonary hypertension, emphasizing the need for early identification and intervention. Managing paediatric PTLD involves addressing both the acute and long-term consequences of TB. Key strategies include, prompt recognition and treatment of TB are essential to minimize lung damage. Regular follow-up, including imaging and pulmonary function testing, can help detect and manage PTLD early. Pulmonary rehabilitation, including physiotherapy and respiratory exercises, can improve lung function and quality of life. Ensuring timely BCG vaccination and explaining new vaccines can help prevent severe TB in children. Addressing malnutrition, HIV, and other comorbidities can reduce the risk of PTLD.

CONCLUSION

Paediatric post-TB lung disease is a prevalent and underappreciated consequence of childhood TB, with significant implications for long-term health. Imaging plays a vital role in identifying and characterizing the structural abnormalities associated with PTLD, guiding clinical management. A multidisciplinary approach that includes early diagnosis, effective treatment, and regular follow-up is essential to improving outcomes for affected children. Greater awareness, research, and resource allocation are needed to address this growing public health challenge effectively.