

## TEACHING FILES (GRAND ROUNDS)

# TUBERCULOUS PLEURAL EFFUSION- RESIDUAL PLEURAL THICKENING

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### ARTICLE HISTORY

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### Clinical Problem

A 7 year old girl presented with fever for one month. Father had been treated for pulmonary tuberculosis (TB) 6 months ago. She was detected to have right sided pleural effusion with pneumonia on chest X-ray. She underwent pleural tap and pleural fluid white blood cell count was 2500/cumm (58% lymphocytes) with adenosine deaminase (ADA) of 93.2 U/L. She was started on anti-tuberculous therapy (ATT). She responded to the same. ATT was stopped after 8 months of treatment. However, chest X-ray showed small bleb at the right which was suspected to be due to pleural thickening.

*How long does it take to get radiological resolution with tuberculous pleural effusion?*

### Expert Opinion

Tuberculous pleural effusion (TPE) is one of the most common forms of extra pulmonary TB and the most common cause of pleural effusion in areas where TB is endemic.<sup>1,2</sup> The immediate cause of effusion is delayed hypersensitivity response to mycobacterial antigens in the pleural space but less commonly can be due to rupture of a sub-pleural tubercular focus into the pleural space.<sup>1,2</sup> Tuberculous antigens in the pleural space trigger an immune response involving macrophages, CD4+ T lymphocytes and due to the cytokines released by these cells.<sup>3</sup> Initially there is a rapid neutrophilic response within the pleura which is symptomatic, this is followed by a lymphocyte driven immune response with formation of tubercular granuloma and release of ADA.<sup>4</sup> TB pleural effusion of significant size (>30% hemithorax) can undergo significant resolution with standard six month ATT alone by 12 months.<sup>5</sup> Pleural fibrosis is a well-known complication of TB pleuritis with its prevalence varying between 5-55% and causes pleural thickening. Residual pleural thickening (RPT) occurs can have long term clinical implications such as chronic chest pain, dyspnea and impaired lung function.<sup>4,6</sup> RPT was found to be greater in males with direct relation to amount of cigarette smoking and

lower in smaller effusions. In the group with RPT, serum albumin was found to be lower, pleural fluid protein and pleural fluid protein to serum protein ratio was found to be higher and total ADA was higher and thus the study concluded that immunological mechanisms lead to the development of pleural thickening.<sup>6</sup> Another study showed thoracocentesis prevented the occurrence of pleural thickening, apart from being diagnostic and therapeutic.<sup>7</sup> Thus management of pleural TB involves four-drug regimen along with therapeutic thoracocentesis and the radiological resolution takes longer exists even after the required duration of treatment is completed.

### Compliance with Ethical Standards

**Funding:** None

**Conflict of Interest:** None

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