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Imaging & Beyond by Jankharia
CELEBRATING 55 YEARS
INNER SPACES
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Chest Tuberculosis – An Update

Despite the fact that tuberculosis has been around for centuries and that Indian radiologists probably see more tuberculosis (TB) than any other disease entity, there is still always something more to learn.

Post-Tuberculosis Lung Disease (PTLD)

This is the term used nowadays to describe patients with prior TB, who have stigmata (Fig. 1) that still affect their health as this table (Fig. 2) shows [1].

Drug-Resistant TB (DR-TB)

There is limited literature on how to suspect DR-TB (Fig. 3) on CT scans. Typically, large cavities (> 30 mm) involving more than 3 lobes with extensive "tree-in-bud" should alert us to this possibility (Fig. 4) [2].

Internal Mammary Node Enlargement in Patients with Tuberculous Pleural Effusion

This is an interesting observation [3]. In patients below the age of 50 with suspected tuberculous pleural effusion, negative pleural tap and no lung lesions, if there is an enlarged internal mammary node > 5 mm, it strongly suggests TB (Fig. 5).

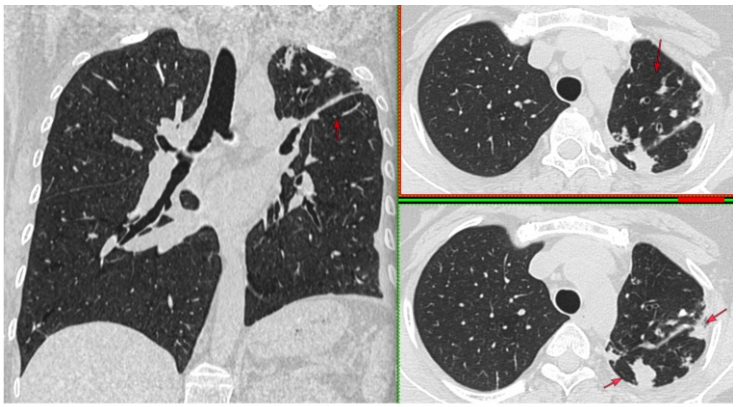

Fig. 1. Post-tuberculosis lung disease (PTLD). 42-years old with typical findings of prior TB with reduced left upper lobe lung volume and foci of fibrosis.

Table 1. Clinical patterns of PTLD

Compartment	Clinical patterns	Suggested definition
Airways	Tuberculosis-associated obstructive lung disease	Airway obstruction (FEV1/FVC ratio <0.7 OR <LLN) thought primarily related to small airway disease
	Bronchiectasis	CT definition – evidence of airway dilatation > diameter of adjacent vessel, or non-tapering, or CXR definition – evidence of ring shadows and tramlines
Parenchyma	Cavitation	A gas-filled space either within an area of pulmonary consolidation or surrounded by a thin wall
	Parenchymal destruction	Extensive destruction of lung tissue, with a gas-filled space/collapsed parenchyma occupying the volume of ≥1 lobe
	Fibrotic change	Areas of parenchymal scarring with associated volume loss
	Aspergillus-related lung disease	Evidence of aspergilloma on imaging or chronic pulmonary aspergillosis on imaging and blood testing
Pleural	Chronic pleural disease	Evidence of pleural thickening on CXR or CT imaging
Pulmonary vascular	Pulmonary hypertension	Elevated pulmonary artery pressures, as estimated using Doppler echocardiography or measured at right heart catheterisation

PTLD, post-tuberculosis lung disease; FEV1, forced expiratory volume in 1 s; CT, computerized tomography; CXR, chest radiograph.

Fig. 2: Table of the various conditions that suggest PTLD (from reference 1)

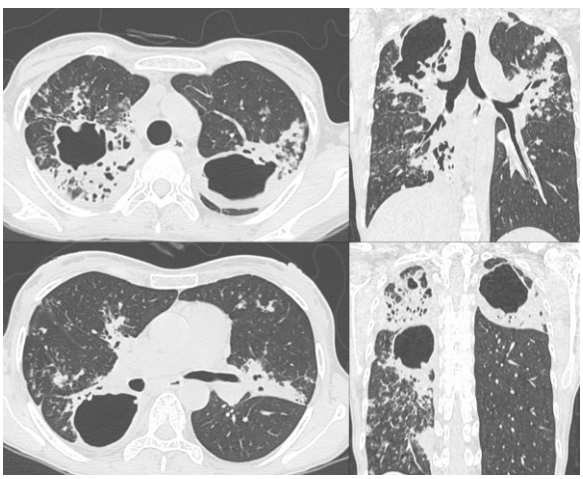

Fig. 3: Drug-resistant TB. Axial and coronal images show large cavities in more than 3 lobes with consolidation and infectious bronchiolitis.

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At a glance

- PTLD is the term used for patients with stigmata of tuberculosis
- Large cavities in more than 3 lobes point towards drug-resistant TB
- Enlarged internal mammary nodes may suggest TB as an etiology of unexplained pleural effusions

References:

1 Allwood BW et al. Post-Tuberculosis Lung Disease: Clinical Review of an Under-Recognised Global Challenge. Respiration. 2021;100(8):751–63.

2 Xu CJ et al. Chinese expert consensus on imaging diagnosis of drug-resistant pulmonary tuberculosis. Quant Imaging Med Surg. 2024 Jan;14(1):1039–60.

3 Levi G et al. Diagnostic role of internal mammary lymph node involvement in tuberculous pleurisy: a multicenter study. Pulmonology. 2024 Jul;30(4):330–6

YouTube Videos

All these cases have been discussed on YouTube as Case of the Day. To subscribe or to view the videos, please use this QR code (Fig. 6).

CT Findings in Drug-Sensitive vs. Drug-Resistant Pulmonary TB ChatGPT Summary

CT Feature	DS-TB	MR-/RR-TB	MDR-/PDR-TB	XDR-TB
Cavity Presence	20–40%	Often single, nodular	68–85%; multiple; ≥3 is diagnostic	Up to 85%; avg. 4.1 cavities
Cavity Size	Avg. 1.4 cavities	Usually small	Large (>30 mm in 83.7%)	Larger (avg. 36 mm)
Cavity Wall Thickness	Thin	Variable	Thick (up to 8 mm; 62.3%)	Very thick (avg. 11 mm)
Distribution	1–2 lobes (upper)	Often localized	≥3 lobes; bilateral (80–93%)	Extensive; ≥3 lobes
Consolidation	Common	Frequent	Often with cavities	Extensive; destructive
Tree-in-Bud Sign	Seen in 95%	Present	Common	Extensive and widespread
Nodules	Present	Nodular cavities	Centrilobular, miliary	Dense with cords/satellites
Bronchiectasis	Occasional	Mild	Frequent; draining cavities	Severe, distorted
Pleural Findings	Minimal	Occasional	Thickening, effusion	Effusion with calcification
Lymphadenopathy	May be present	Frequent	Common	Often calcified
Chronic Changes	Mild fibrosis	Mild	Collapse, shift, fibrosis	Damaged lungs, poor response

Fig. 4: Table of the findings in various types of drug-resistant TB (from reference 2)

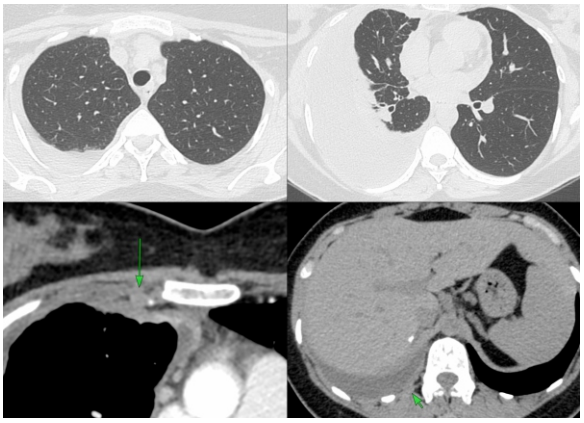

Fig. 5: Right pleural effusion: 31-years old with a right pleural effusion and no definitive answer from a pleural aspiration, which showed an exudate with elevated ADA levels. The right internal mammary node is enlarged (long green arrow in left lower soft tissue image), suggesting that this is likely of tuberculous etiology.

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