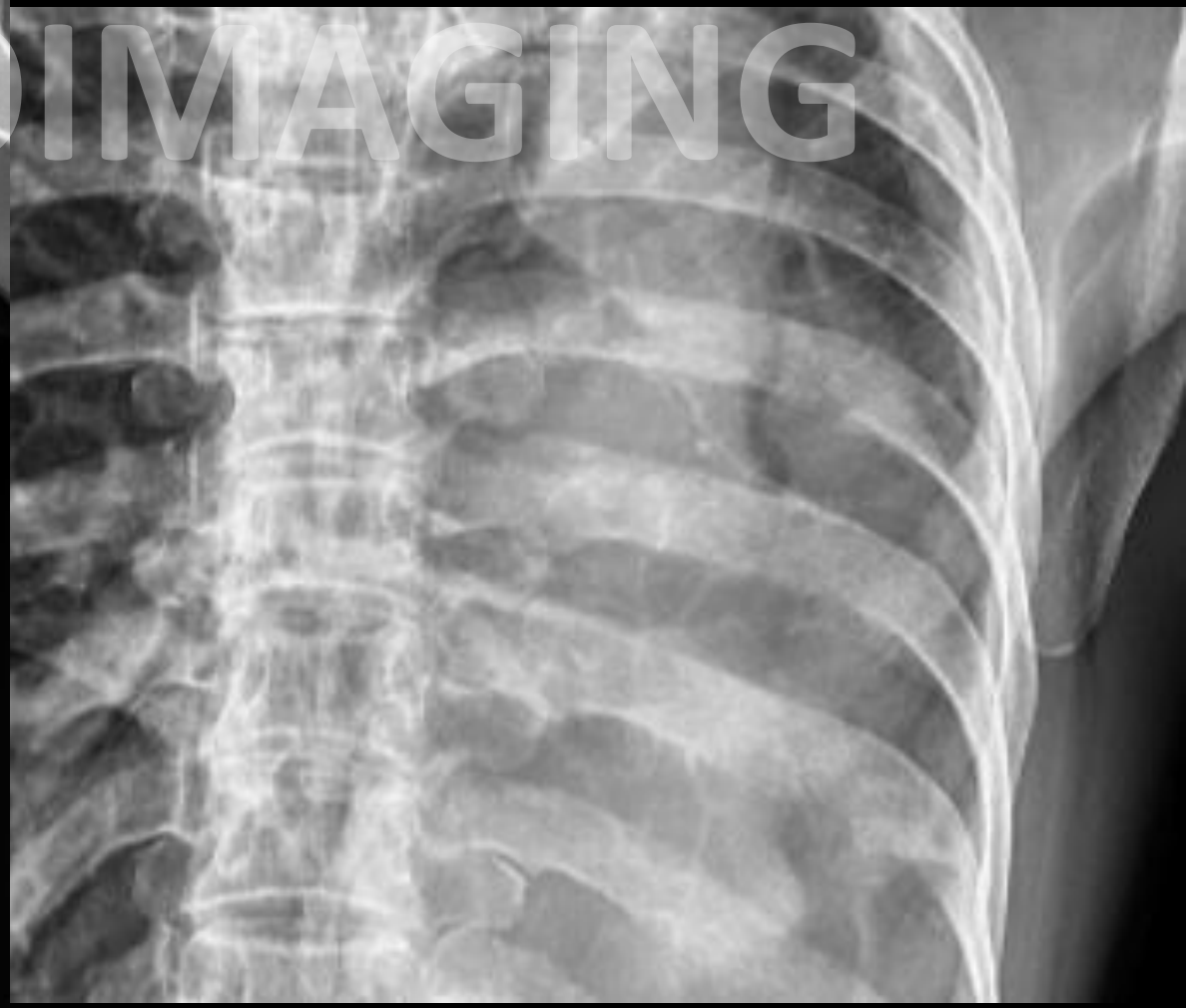
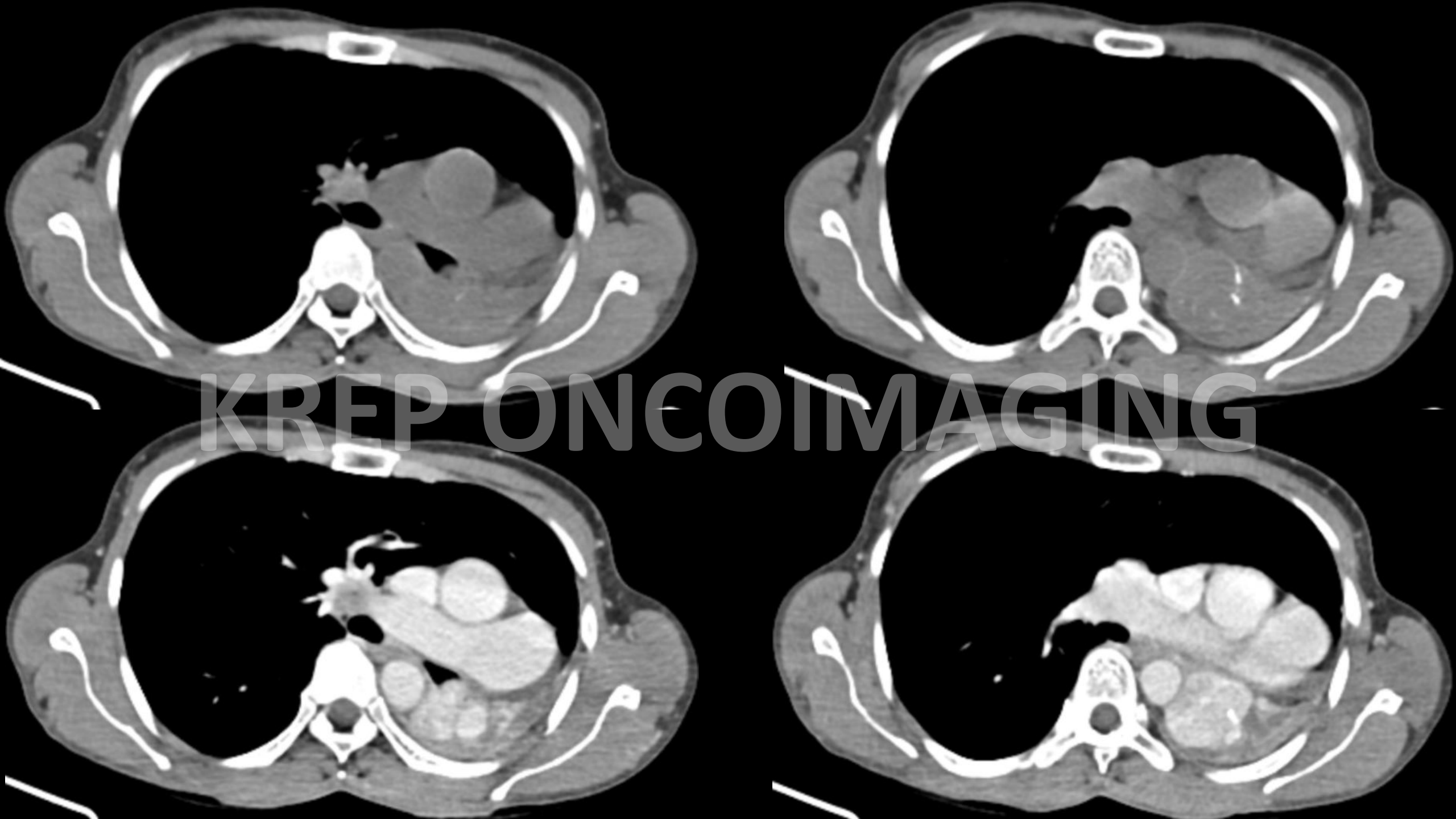
2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM



- Veil like opacity in left hemithorax mainly in the left upper zone medial third and the mid and lower zones with volume loss and ipsilateral mediastinal shift.
- Cardiac and left diaphragm silhouette are lost. Right hemidiaphragm is flattened.
- Right lung hyperinflation is suggested.
- On close inspection, a left main bronchus cutoff can be identified with a convex bulging opacity.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- Complete collapse of left lung due to a circumscribed endobronchial mass showing intense enhancement. On Plain CT correlation, few linear peripheral and internal calcific foci are noted (on a closer inspection of the radiograph, few calcifications can be seen).
  - Medially the lesion is abutting the descending thoracic aorta with an arc of contact of about 90 degrees.
  - Anteriorly the lesion shows effaced planes with pulmonary trunk and right PA with arc of contact of about 90 degrees.
- No evidence of necrosis, or any bronchial wall invasion, peribronchial extension, and nodal enlargement.
- Left cardiomediastinal shift is noted. There is compensatory hyperinflation of right lung with tongue like projection crossing midline.
  - **Features are typical of an endobronchial carcinoid. No evidence of malignancy.**

1. **Pathology & Classification:**
   - **Neuroendocrine tumors** of the lung arising from **Kulchitsky cells** of bronchial mucosa.
   - Two subtypes: **Typical carcinoid (low-grade, <2 mitoses/2 mm², no necrosis)** and **Atypical carcinoid (intermediate-grade, 2–10 mitoses or focal necrosis)**.
2. **Epidemiology & Clinical Context:**
   - Account for **1–2% of lung neoplasms**; occur in **younger, non-smoking patients** compared to other lung cancers.
   - Symptoms depend on location — **endobronchial tumors cause cough, wheeze, hemoptysis, or recurrent pneumonia**; **peripheral lesions** often incidental.
3. **CT Morphology:**
   - **Typical carcinoid:** Well-defined, **central endobronchial or hilar mass**, often **enhancing vividly (>100 HU)** due to vascularity; may cause **bronchial obstruction and distal atelectasis or mucoid impaction**.
   - **Atypical carcinoid:** More **peripheral**, larger, **lobulated or spiculated**, with occasional **necrosis or calcification**.
   - **Calcification** (punctate or coarse) seen in ~30% of cases.
4. **MRI Features:**
   - **T1:** Iso- to slightly hypointense; **T2:** intermediate to high signal; **post-contrast:** intense enhancement due to hypervascularity.
   - Useful for **evaluating vascular or mediastinal invasion** and differentiating from mucoid impaction (which is T1 hyperintense, non-enhancing).

5. **Functional Imaging:**
    - **68Ga-DOTATATE PET/CT** (somatostatin receptor imaging) is the **preferred modality** — high uptake in typical carcinoids.
    - **FDG-PET/CT:** Variable uptake — low in typical, moderate-to-high in atypical or high-grade neuroendocrine carcinomas.
    - Combined functional–morphologic imaging differentiates **indolent vs aggressive biology**.
6. **Patterns of Spread:**
    - **Typical carcinoid:** Rare nodal or distant metastasis (~5–15%).
    - **Atypical carcinoid: Higher metastatic potential (30–50%)**, especially to **hilar/mediastinal nodes, liver, and bone.**
    - Evaluate for **bronchial wall invasion, peribronchial extension, and nodal enlargement** on CT/MRI.
7. **Differential Diagnosis:**
    - **Typical carcinoid:** Distinguish from **bronchial adenoma, hamartoma, mucoid impaction, metastasis**, or **endobronchial aspergilloma.**
    - **Atypical carcinoid:** Differentiate from **adenocarcinoma or small-cell neuroendocrine carcinoma** (based on FDG uptake, growth rate, necrosis).
8. **Oncoradiologic Importance:**
    - Imaging defines **tumor location, vascular invasion, nodal involvement, and metastasis**, guiding **surgical resectability (bronchoplastic vs lobectomy).**
    - **Typical carcinoids**: Managed by **sleeve resection or lobectomy** with nodal dissection.
    - **Atypical carcinoids**: Often need **systemic therapy and closer surveillance.**
    - Reporting should describe **enhancement, airway relation, vascular encasement, nodal spread, and functional PET characteristics.**

Contributors

Dr. M S Kashif
MD, Fellowship in Oncoimaging

Dr. Zain Sarmast
MD, Fellowship in Oncoimaging