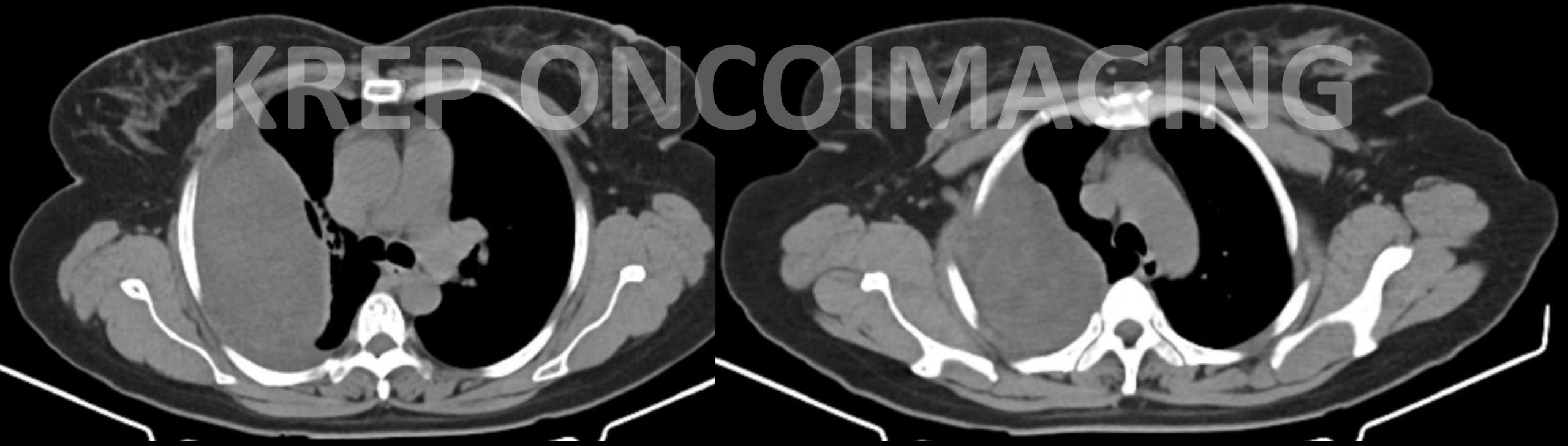
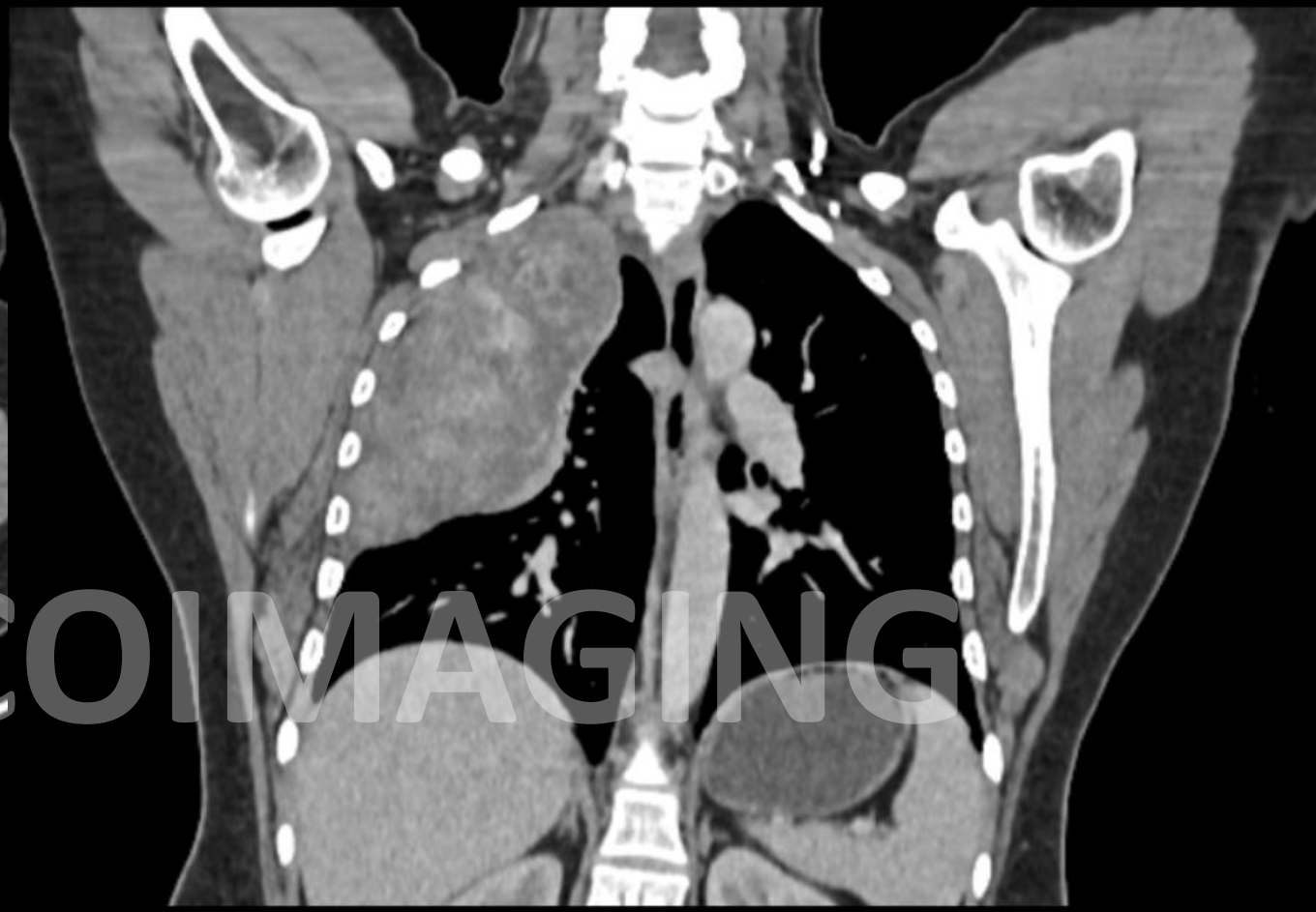
2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM


KREP ONCOIMAGING



- Large lobulated sessile pleural based mass along right lateral costal surface showing heterogeneous moderate enhancement; it measures approximately 13 x 9 x 5 cm.
- It shows smooth margins. No evidence of rib erosion. No extrathoracic extension. No intrapulmonary extension.
- No large pleural effusion or pericardial effusion.
- No significant mediastinal lymphadenopathy.

- Histopathology: Spindle cell neoplasm
- IHC:
  - Positive for STAT-6, CD 34,
  - Negative for TTF-1, CK 5/6, Calretinin (cytoplasmic), HMB 45, WT1
  - Ki Proliferation Index- 21%
- Immunomorphology favours Solitary Fibrous Tumour

1. **Pathology & Origin:**
    - Rare **mesenchymal neoplasm** arising from **submesothelial fibroblasts of the pleura**, not from mesothelial cells.
    - Usually **benign (~80%)**, but **10–20% show malignant behavior** (local recurrence, metastasis).
    - Characterized by **NAB2–STAT6 gene fusion**, which produces **STAT6 nuclear immunopositivity** on histopathology.

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2. **Epidemiology & Clinical Context:**
    - Typically occurs in **middle-aged adults (40–70 years)**; no link with asbestos exposure (unlike mesothelioma).
    - Often **asymptomatic**, discovered incidentally; large tumors may cause **chest pain, dyspnea, cough**, or **paraneoplastic syndromes** (esp. **hypoglycemia** from IGF-2 secretion — *Doege–Potter syndrome*).

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3. **CT Morphologic Features:**
    - **Well-defined, lobulated soft-tissue mass** arising from **visceral or parietal pleura**.
    - Often **pedunculated** with a **narrow pleural attachment** (visible stalk in 30–50%).
    - **Smooth margins**, **broad-based or exophytic growth** projecting into pleural space.
    - **Heterogeneous enhancement** due to fibrous and vascular components; **calcification or necrosis** in larger/malignant tumors.
    - **No chest wall invasion** unless malignant.
    - May change position on serial imaging if pedunculated (*"mobile pleural mass sign"*).

4. **MRI Characteristics:**
   - **T1:** Iso- to mildly hypointense to muscle.
   - **T2:** Typically **low to intermediate signal** (fibrous stroma) with **foci of high T2** (myxoid or necrotic areas).
   - **Post-contrast:** Intense, **heterogeneous enhancement**; fibrous areas enhance late and less intensely.
   - Useful to assess **diaphragmatic or chest wall invasion**.

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5. **Functional Imaging:**
   - **FDG-PET/CT:** Variable uptake — mild in benign lesions, higher in malignant ones.
   - **68Ga-DOTATATE PET** may also show uptake due to somatostatin receptor expression in some tumors.
   - PET helps differentiate from mesothelioma or metastatic pleural disease.

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6. **Features Suggesting Malignancy:**
   - **Size >10 cm**, **sessile attachment**, **heterogeneous or necrotic areas**, **pleural effusion**, or **local invasion**.
   - **High mitotic index, nuclear atypia**, or **metastases (lung, bone, liver)** on imaging.
   - **Recurrent or rapidly enlarging** lesion after resection.

7. Differential Diagnosis:
    - **Pleural metastasis:** Multiple, irregular, invasive.
    - **Malignant mesothelioma:** Diffuse pleural thickening encasing lung, associated with effusion.
    - **Localized fibrous pleuritis or lipoma:** Usually homogeneous, non-enhancing or fat density.
    - **Sarcoma:** Aggressive soft-tissue invasion, often with bone destruction.

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8. Oncoradiologic Relevance:
    - Imaging defines **tumor origin (pleural vs extrapleural)**, **pedicle**, **resectability**, and **chest wall/diaphragmatic involvement**.
    - **Complete surgical excision with negative margins** is curative in most benign cases.
    - **Long-term imaging follow-up** is essential due to potential for **late recurrence or malignant transformation**, even after years.
    - Always include **tumor size, attachment (pedunculated/sessile), enhancement pattern, invasion, and pleural effusion status** in structured reports.

Contributors

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