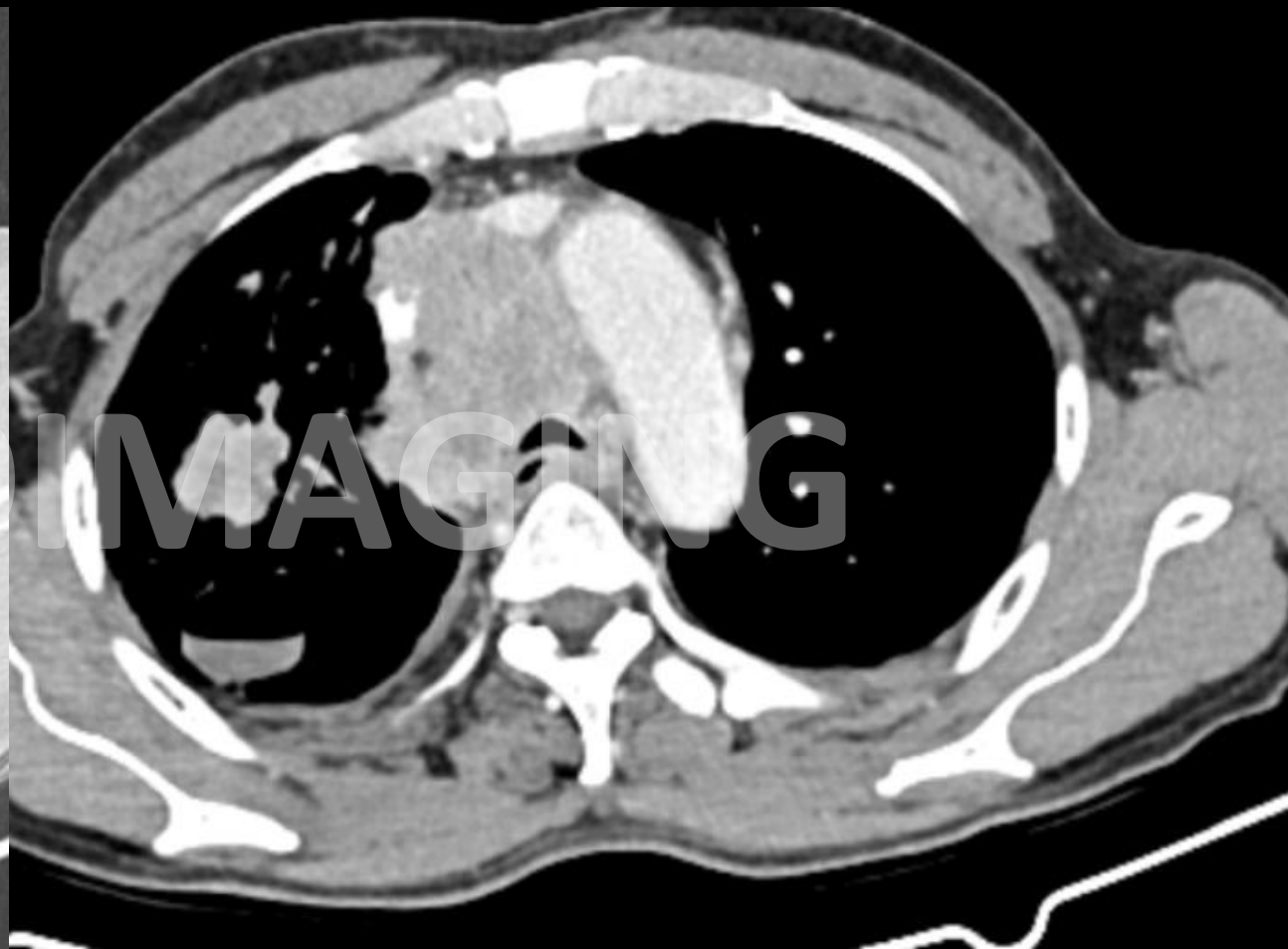
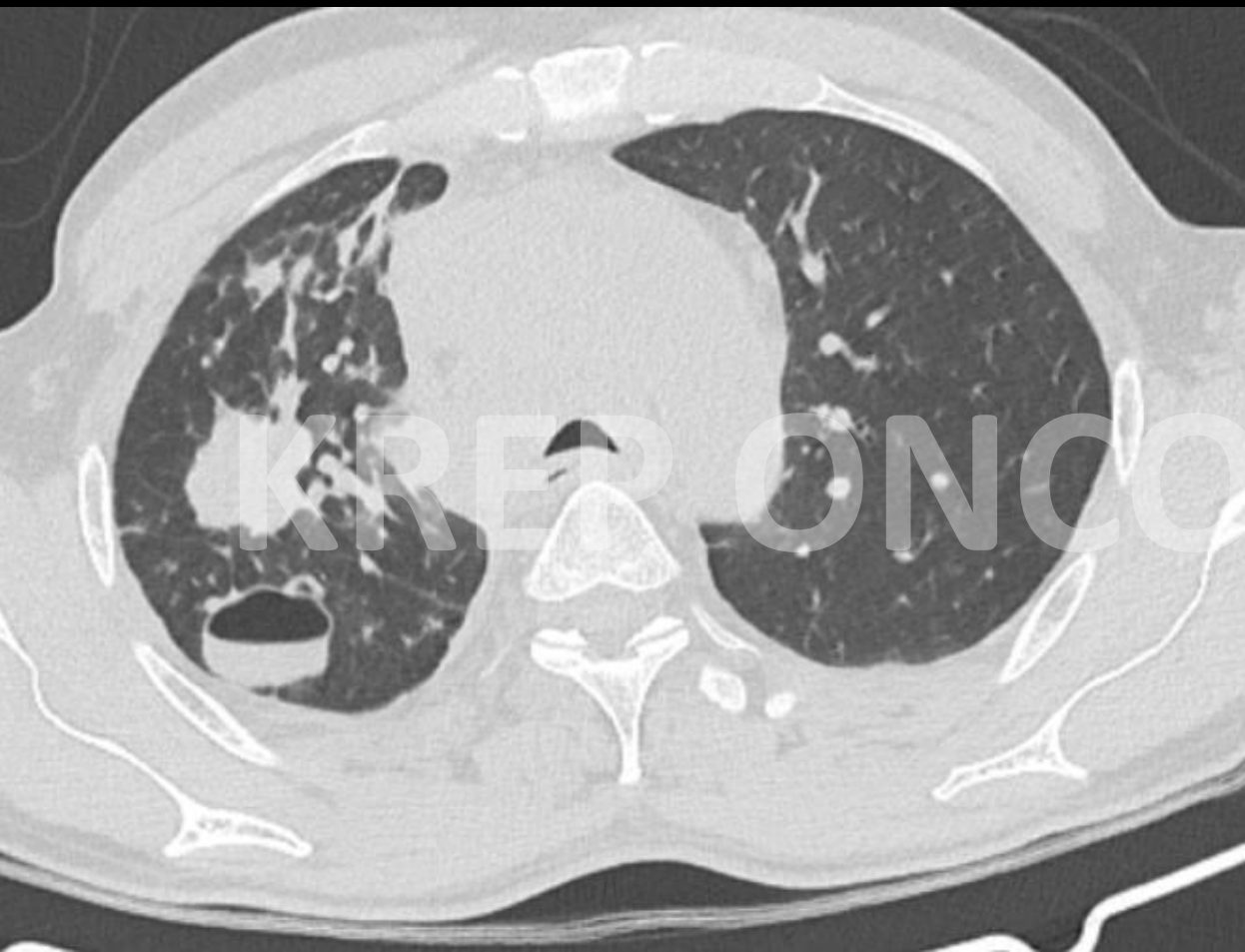


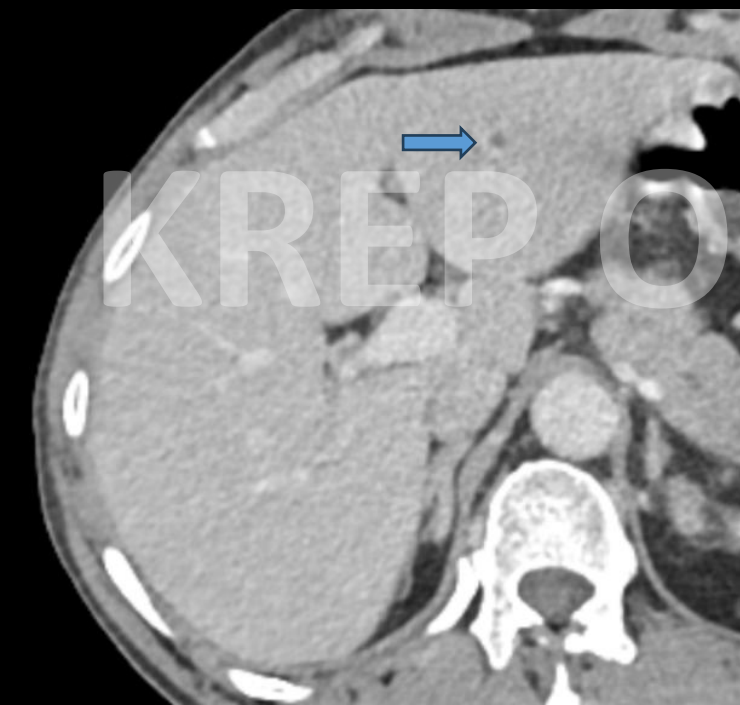
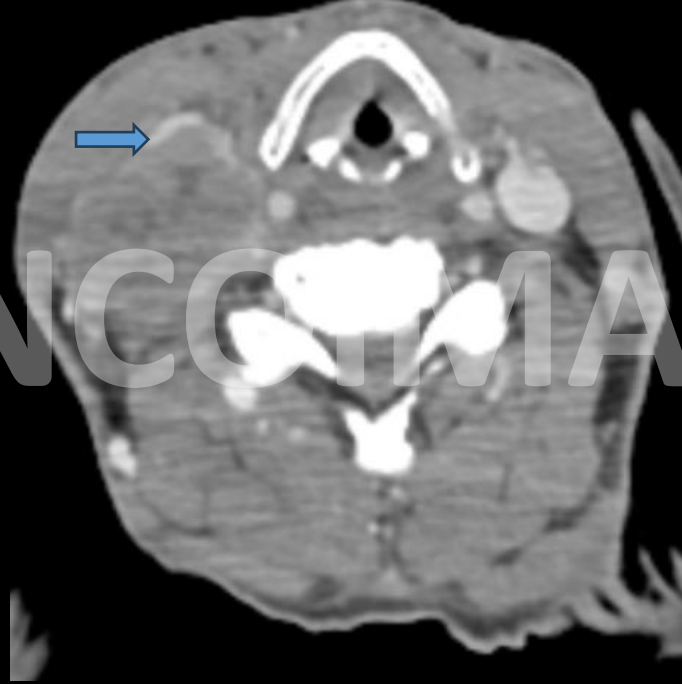


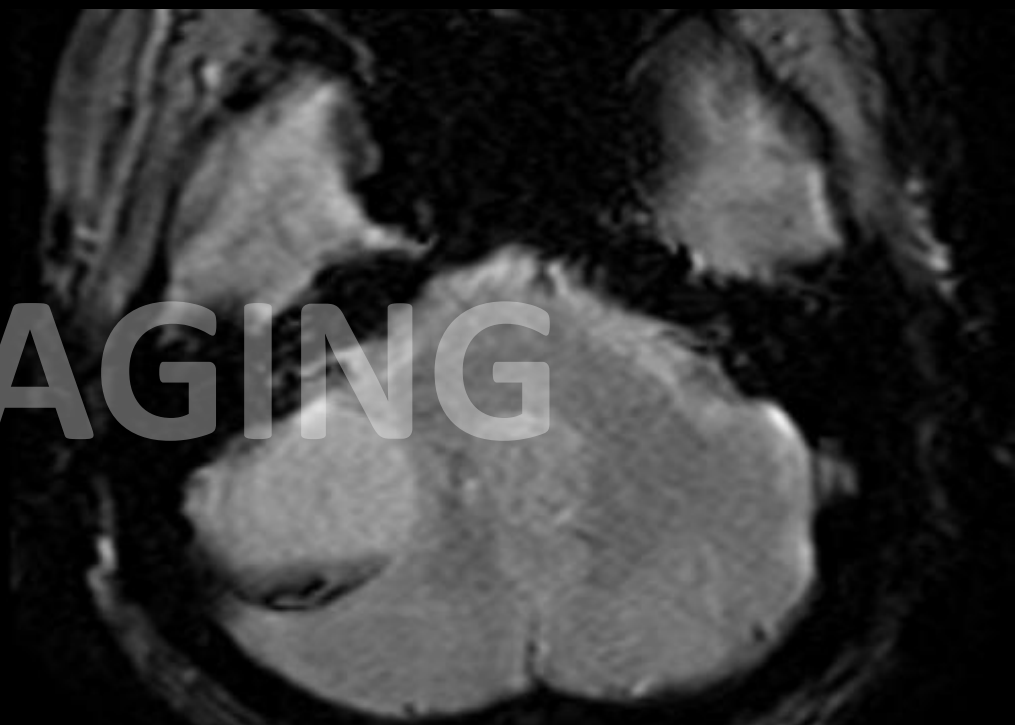
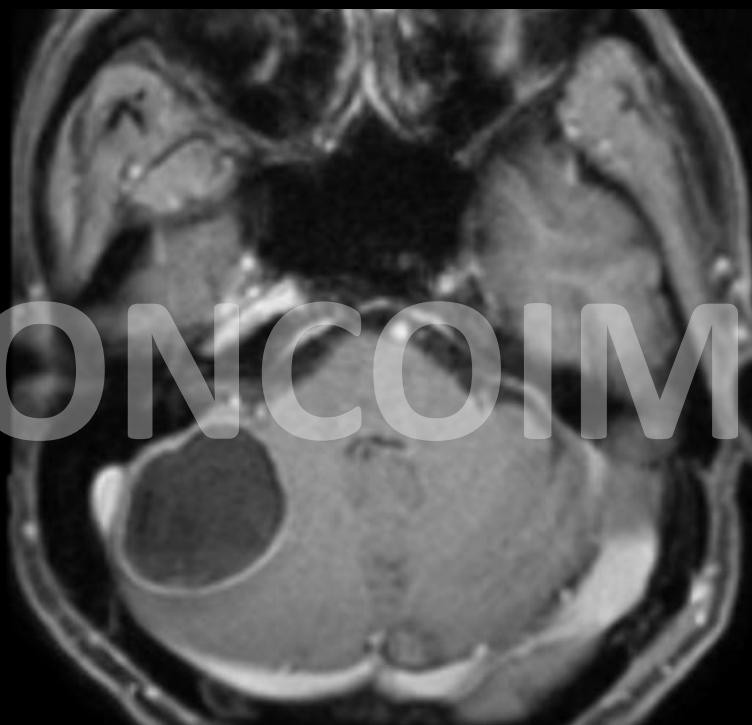
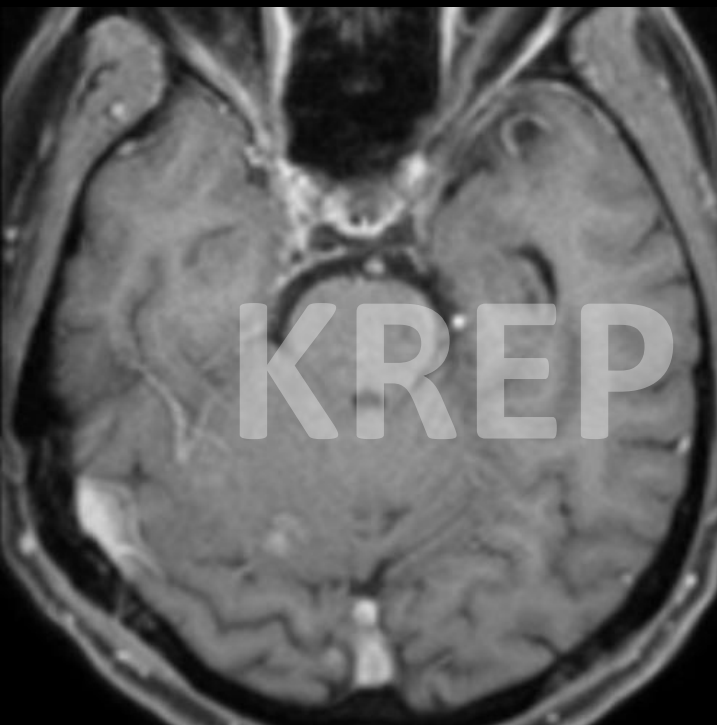
2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

62 y smoker







KREP ONCOIMAGING

- Enhancing nodule in right upper lobe apical segment measuring 2.9 x 2.8 x 2.4 cm with nodular interstitial thickening in surrounding upper lobe parenchyma (suggesting lymphangitis carcinomatosa).
- A small thin-walled cavity with dependent non-enhancing isodense contents in posterior segment of right upper lobe, ?lymphocele or blood products.
- There is nodular pleural thickening at this level along the posterior costal and costovertebral aspect.
- Bulky conglomerate mediastinal lymphnodal mass (~7x8 cm) involving several stations with iENE+ (imaging detected extranodal extension).
 - Invasion noted into SVC. Significant encasement (>180 degrees) of major mediastinal and neck base vessels.
 - There is significant compression of trachea with lost fat planes.
- Metastatic right level 3/4/5 conglomerate nodal mass with iENE, invasion of right IJV.
- Metastatic left adrenal nodules and left paranephric deposits.
- A small cystic lesion in liver, which can be cystic metastasis - needs FNAC correlation.
- A subcutaneous soft tissue deposit in the right lower back / gluteal region posterior to iliac bone.
- Enhancing foci in cerebellum with a cystic hemorrhagic lesion – hemorrhagic metastasis.

1. Pathology & Biology:

- **Highly aggressive neuroendocrine carcinoma** derived from Kulchitsky (neuroendocrine) cells in the bronchial epithelium.
- Characterized by **small cells with scant cytoplasm, nuclear molding, high mitotic index, and necrosis**.
- Strong association with **cigarette smoking (~98%)**.
- **Molecular profile:** TP53 and RB1 loss common; no actionable driver mutations (EGFR/ALK rare).

2. Epidemiology & Clinical Context:

- Accounts for **15–20% of lung cancers**; peak in **6th–7th decade**.
- Presents with **rapidly progressive central tumor**, early metastases, and **paraneoplastic syndromes** (SIADH, Cushing's, Lambert–Eaton).
- Common symptoms: **cough, dyspnea, hemoptysis, SVC syndrome, or widespread metastasis at diagnosis**.

3. CT Morphologic Features:

- **Central, hilar, or perihilar soft-tissue mass** with **bronchial obstruction and post-obstructive collapse**.
- **Bulky mediastinal or hilar adenopathy** often out of proportion to the primary tumor ("oat cell pattern").
- **Ill-defined, lobulated margins**, may invade mediastinum or cause vascular compression (esp. **SVC obstruction**).
- **Cavitation uncommon**, unlike squamous carcinoma.

5. PET/CT and Functional Imaging:

- **FDG-PET/CT:** Intense, diffuse uptake due to high glycolytic activity; essential for **staging limited vs extensive disease**.
 - **68Ga-DOTATATE PET** may show uptake, but less commonly used than in typical neuroendocrine tumors.
 - PET frequently identifies **occult nodal or distant metastases** (bone, liver, adrenal).
-

6. Patterns of Spread:

- **Extremely early hematogenous dissemination** — frequent metastases to **brain, liver, bone, adrenal glands**.
 - **Lymphatic spread** via mediastinal and supraclavicular nodes almost universal.
 - **Direct invasion** into mediastinum, pericardium, and SVC is common in central lesions.
-

7. Staging & Treatment Implications:

- Divided clinically into:
 - **Limited stage:** Confined to one hemithorax and regional nodes (potentially curable with chemoradiation).
 - **Extensive stage:** Distant metastases (systemic therapy only).
- **MRI brain** is mandatory for baseline staging; **PET/CT** aids in detecting extrathoracic disease.
- Rapid response to chemotherapy/radiation but high relapse rate due to micrometastases.

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-

8. Oncoradiologic Importance:

- Imaging defines **central tumor, mediastinal invasion, nodal burden, and metastases** — crucial for staging (TNM and limited/extensive classification).
- **CT** assesses airway/vascular involvement; **PET/CT** for systemic disease; **MRI** for brain and marrow.
- Post-treatment imaging must distinguish **radiation fibrosis** from **residual or recurrent disease** (PET helps).
- Structured reporting should specify **primary site, bronchial/vascular invasion, nodal extent, and metastasis pattern**.

Contributors

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