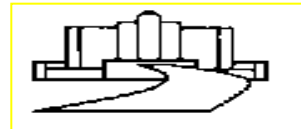


# Bronchial neuro endocrine tumor

MP VULLIERME BEAUJON HOSPITAL  
COURTESY OF  
MP REVEL, COCHIN HOSPITAL, PARIS



# Two main lesions

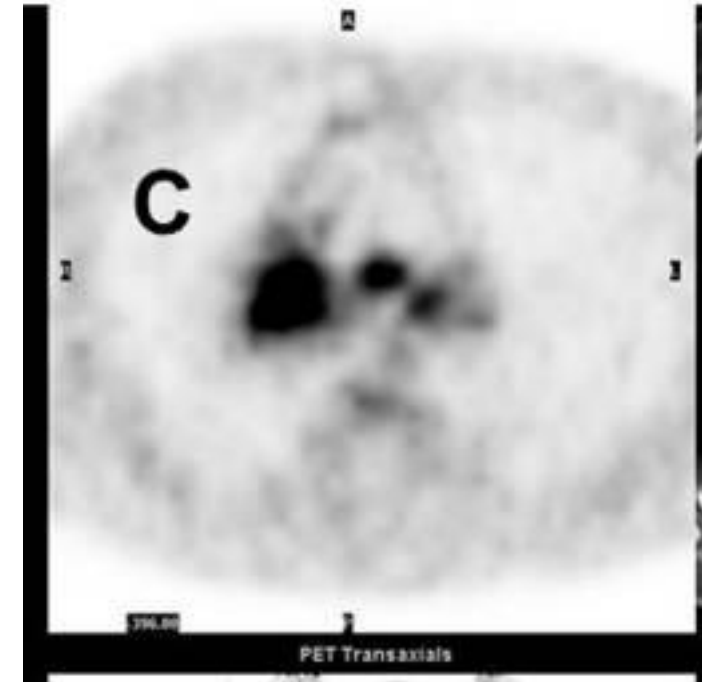
---

Not well differentiated

Carcinoids, well differentiated

# Not well differentiate NET

Same pattern as lung carcinoma



# Carcinoids tumors

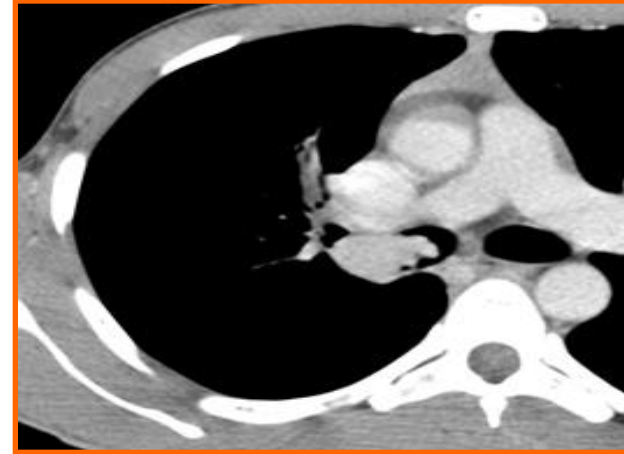
---

Typical or atypical

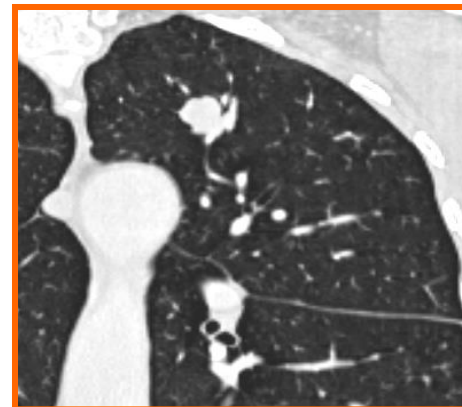
# Two main pattern:

---

- central form



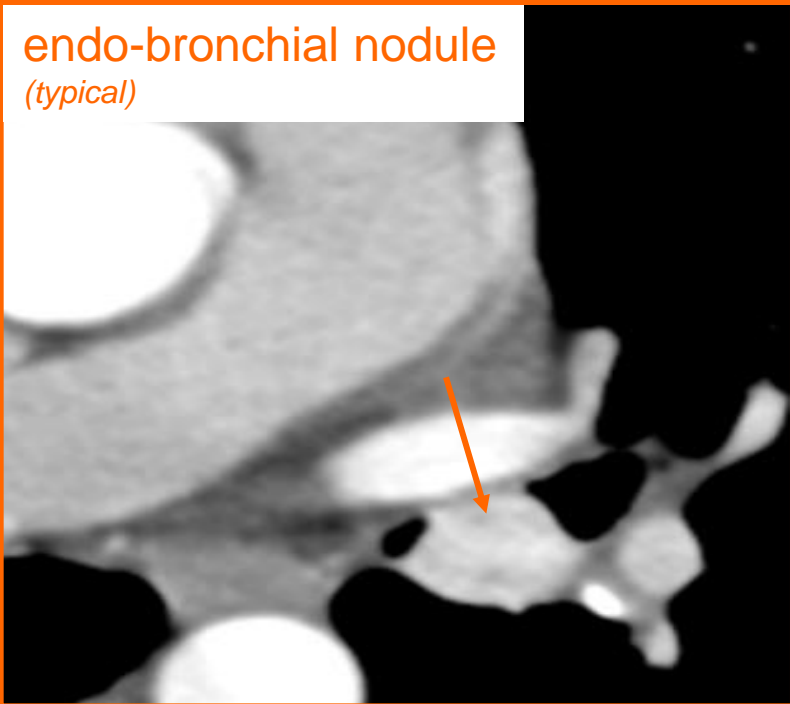
- peripheral one, less symptom,
  - frequently atypical



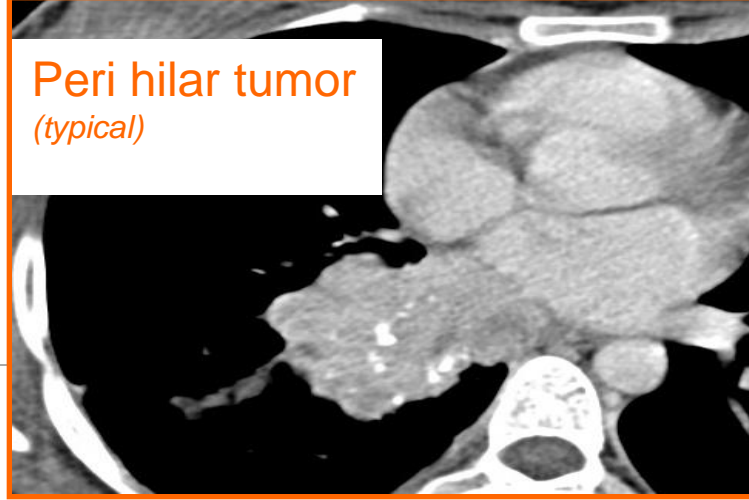
# Central form

- Main bronchial
- lobar or
- segmentary.

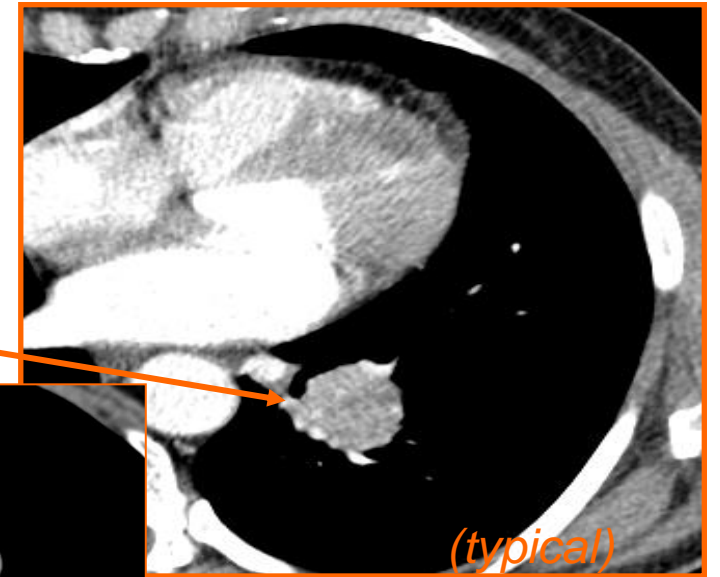
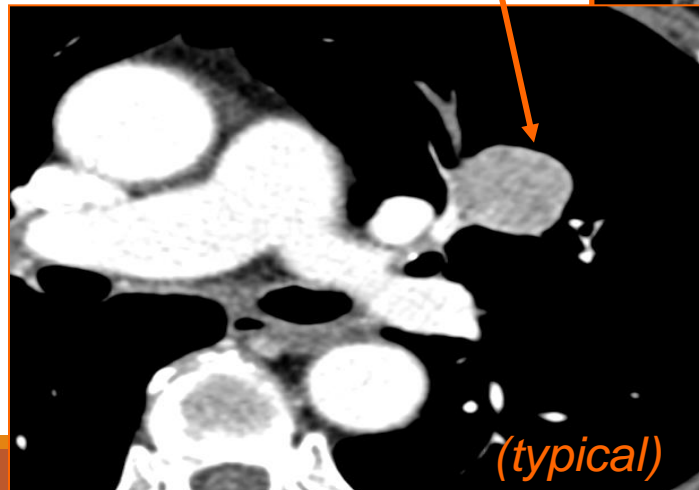
endo-bronchial nodule  
*(typical)*



Peri hilar tumor  
*(typical)*



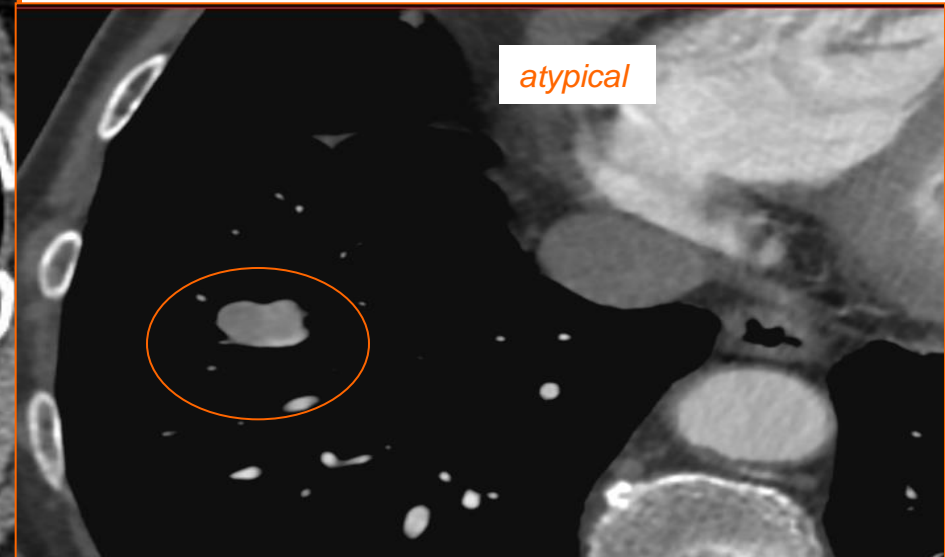
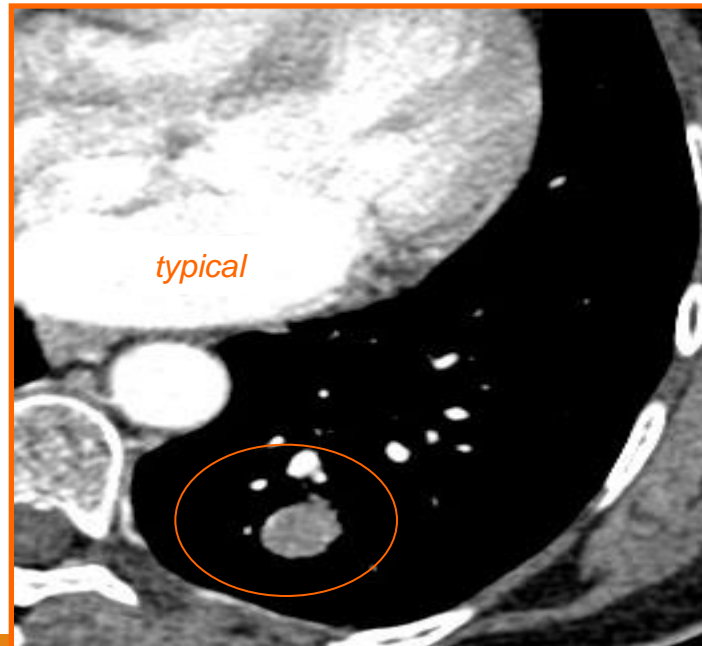
Proximal Nodule



# Peripheral **nodule** (distal bronchial)

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Parenchymal nodule without visible bronchial connexion



# Central bronchial NET

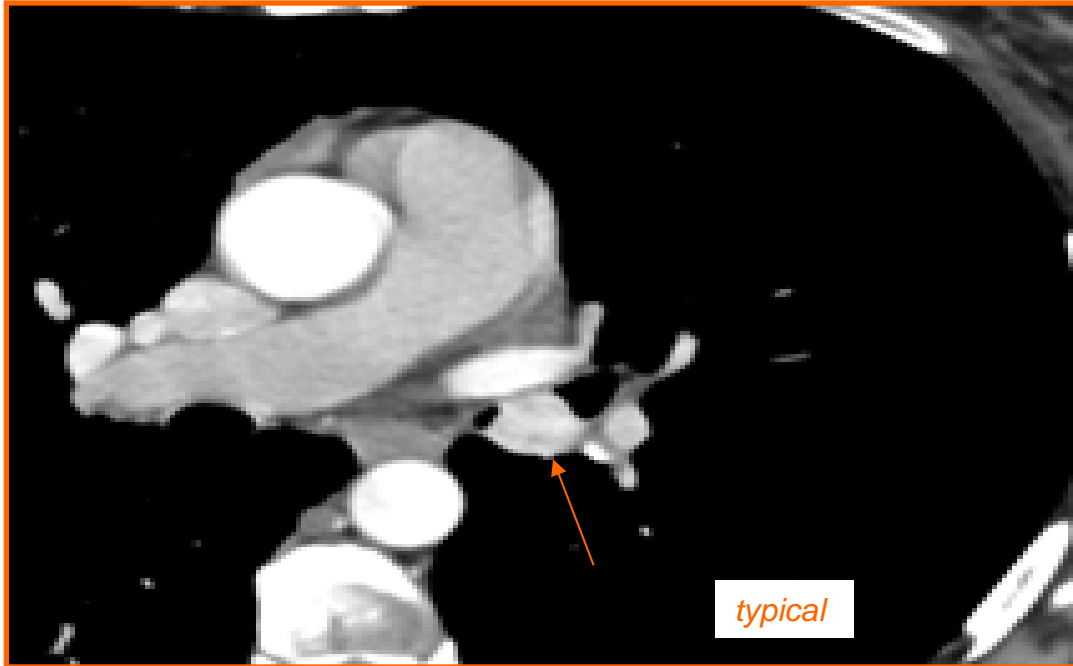
---

- Hyperenhancing
- Calcifications



# enhancing

---

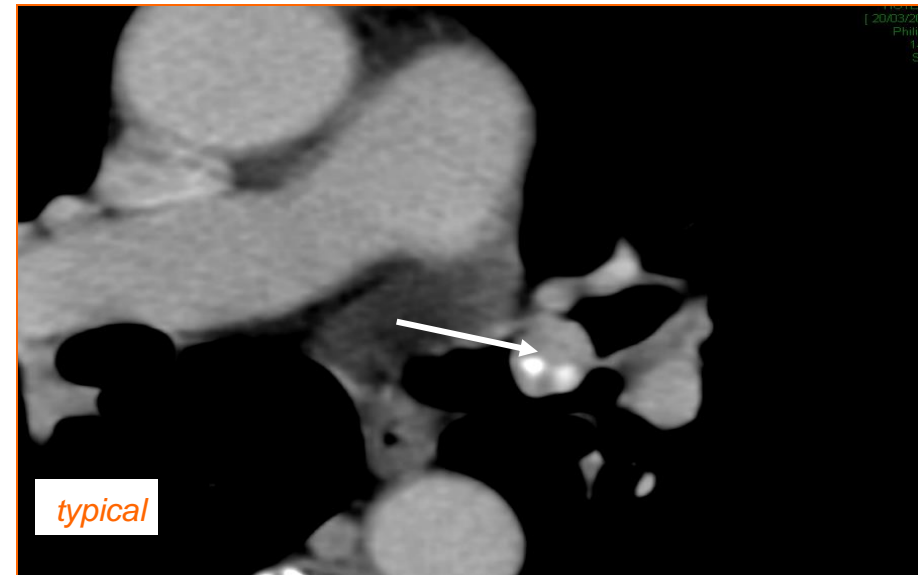
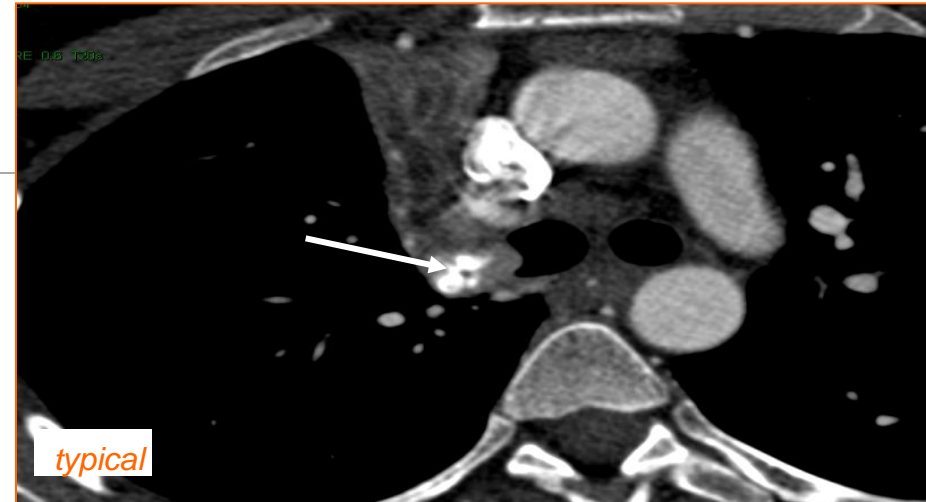
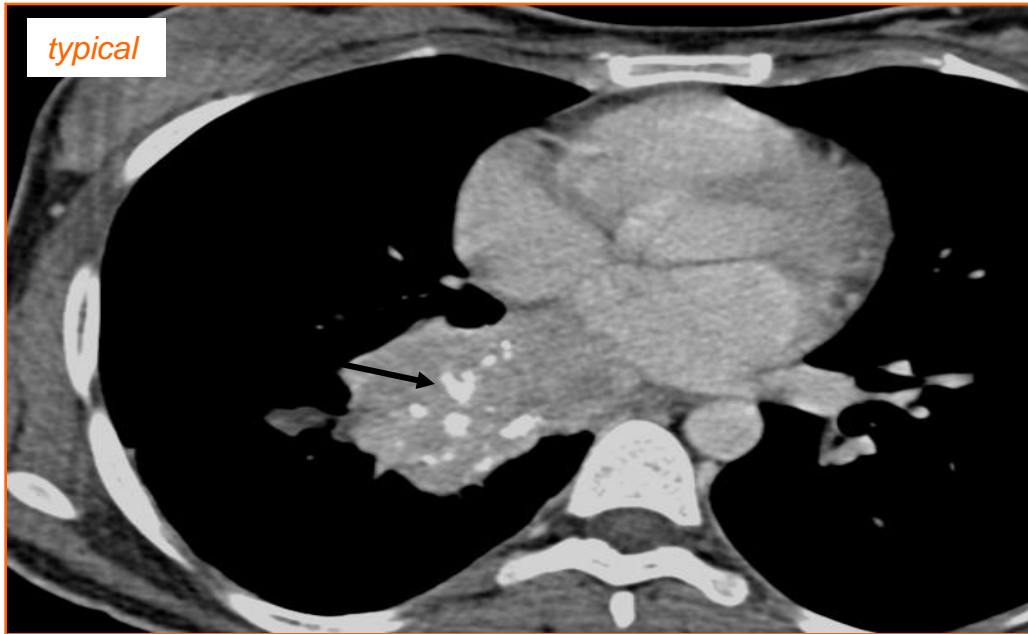


High uptake



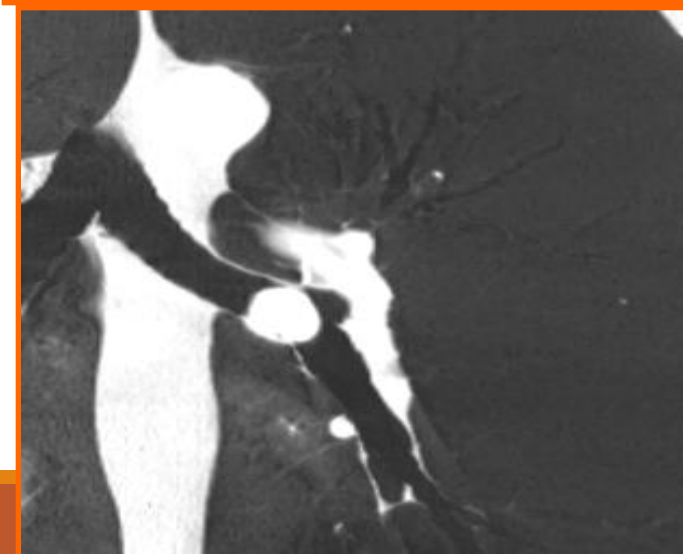
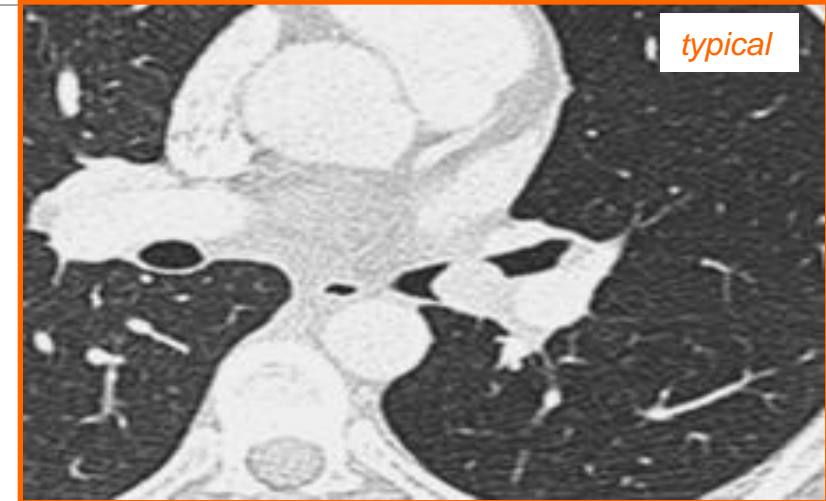
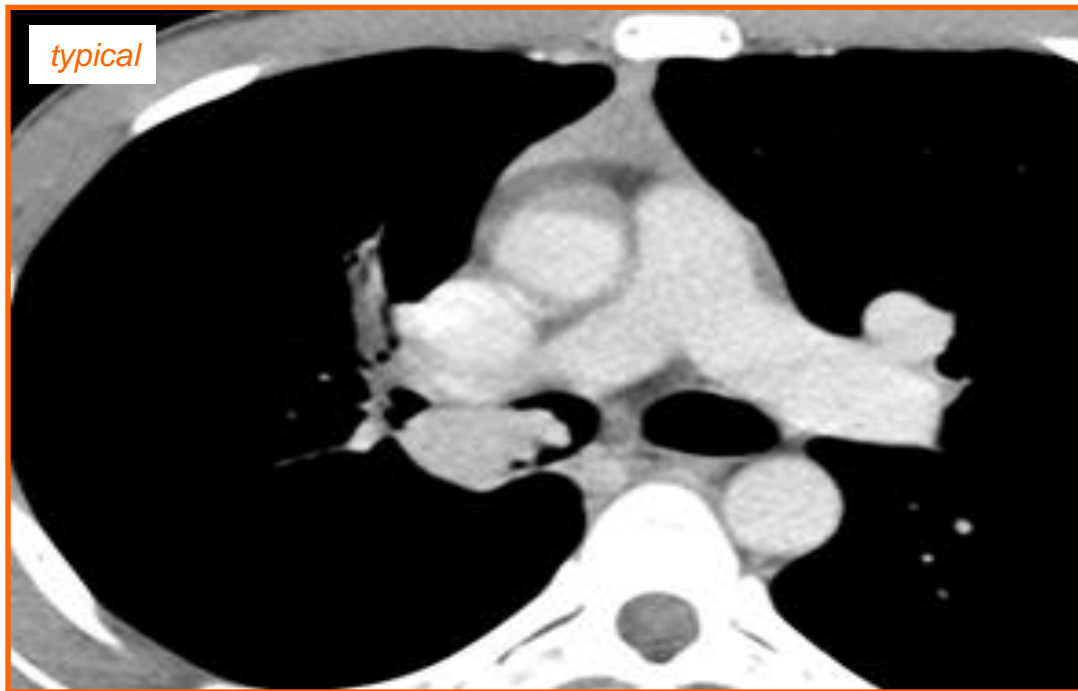
Post contrast density 104 UH

# calcifications



# 1- direct pattern: endobronchial tumor

Biopsy: endoscopy



Central form

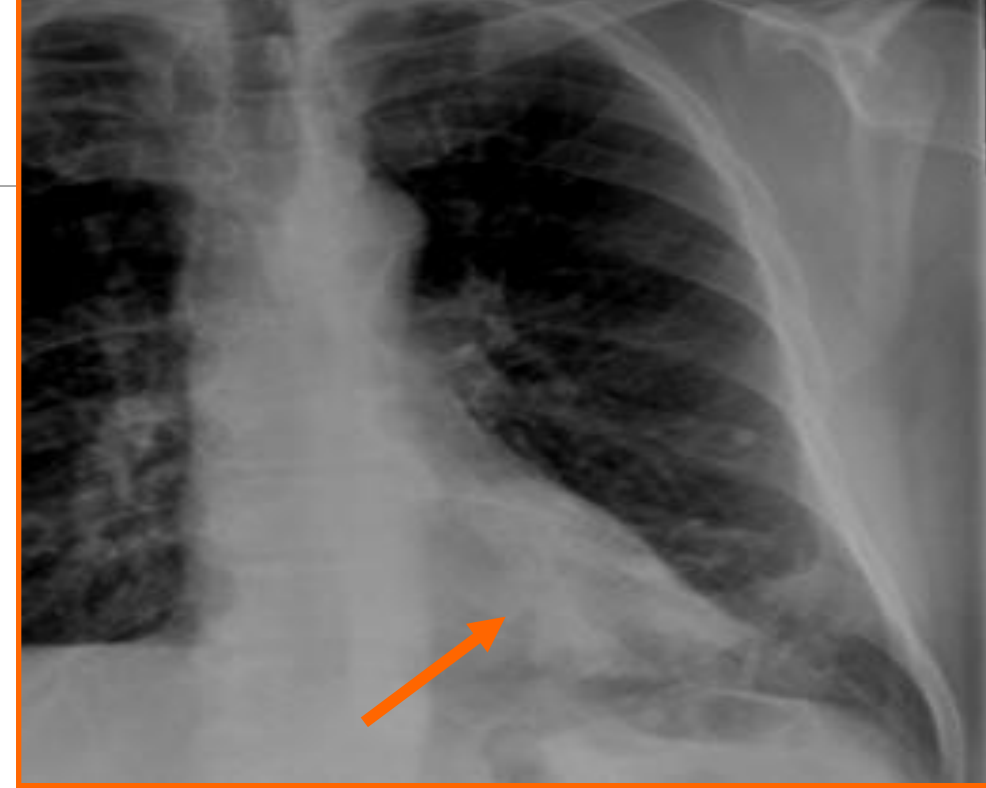
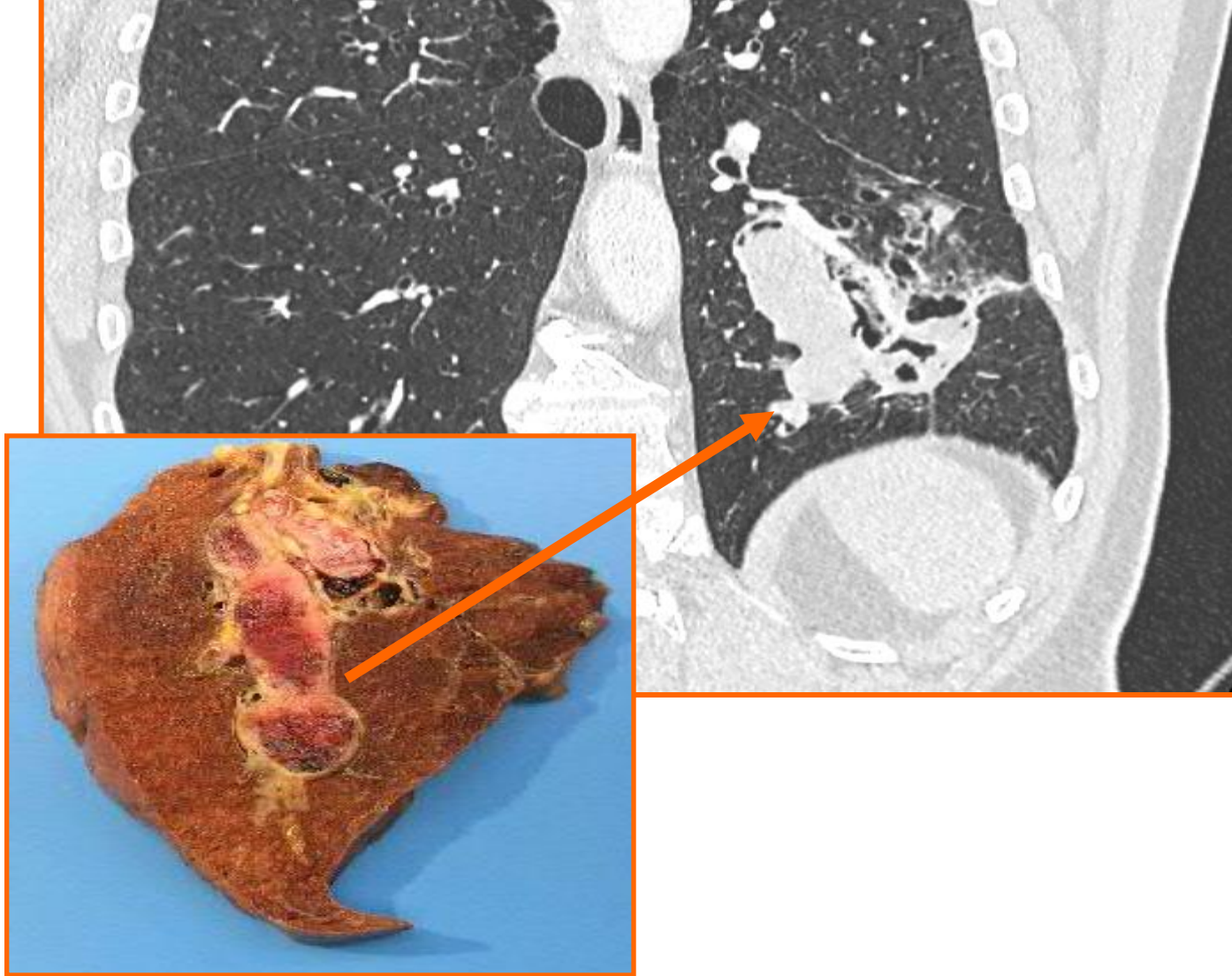
# Endoscopic pattern: biopsy

---

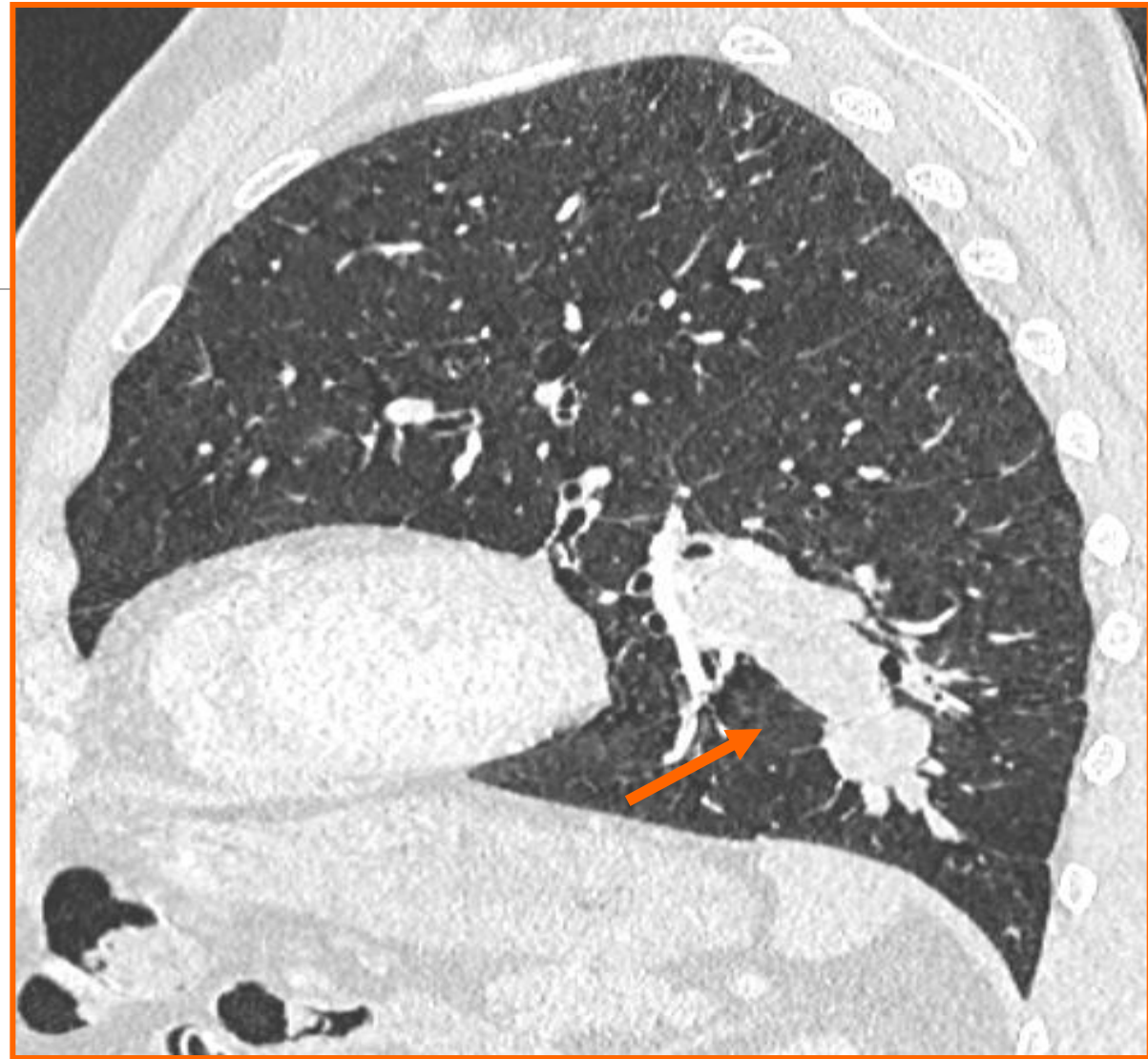
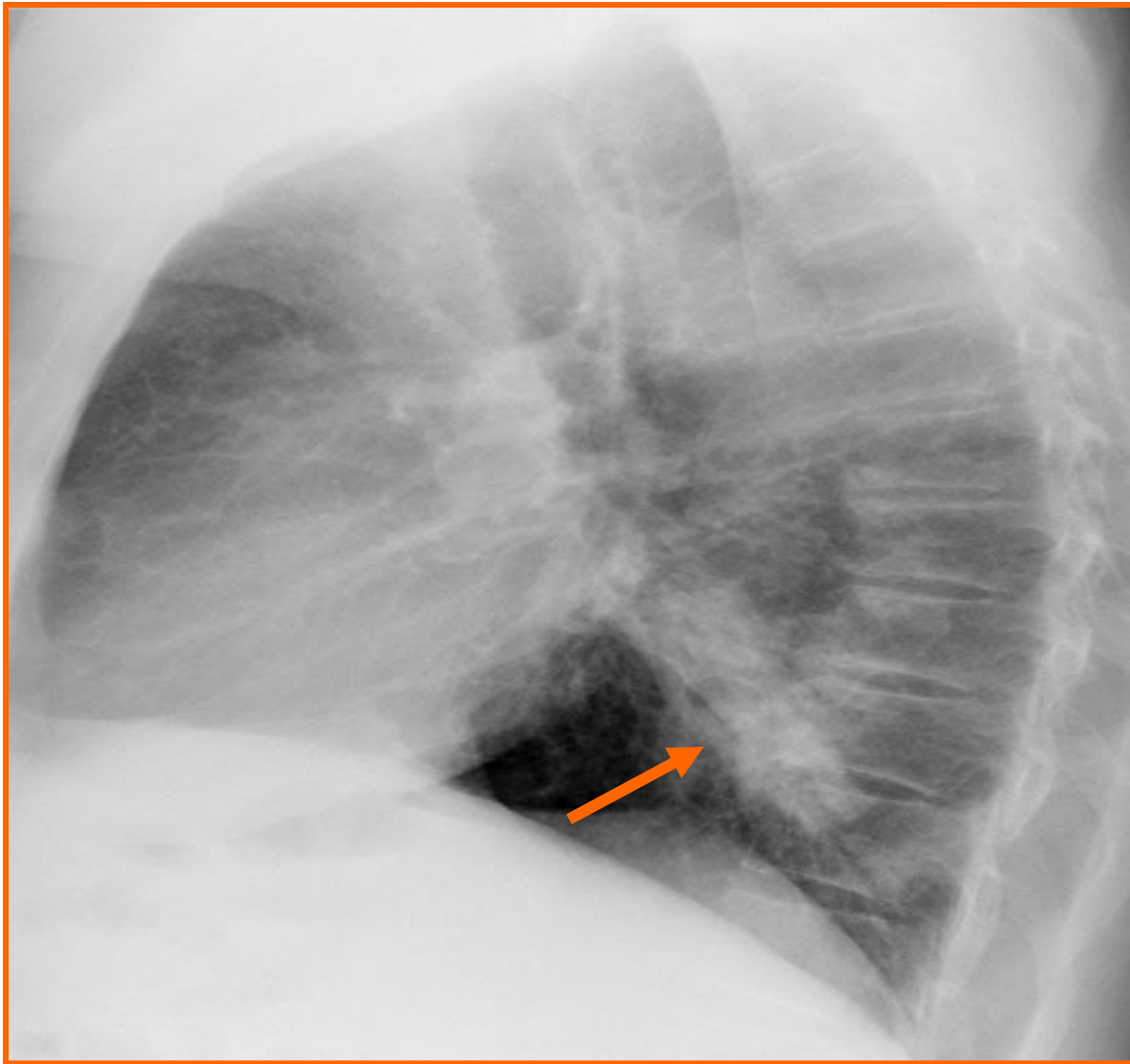
Smooth  
Polyploïde  
Red cherry



## 1- direct pattern: endobronchial



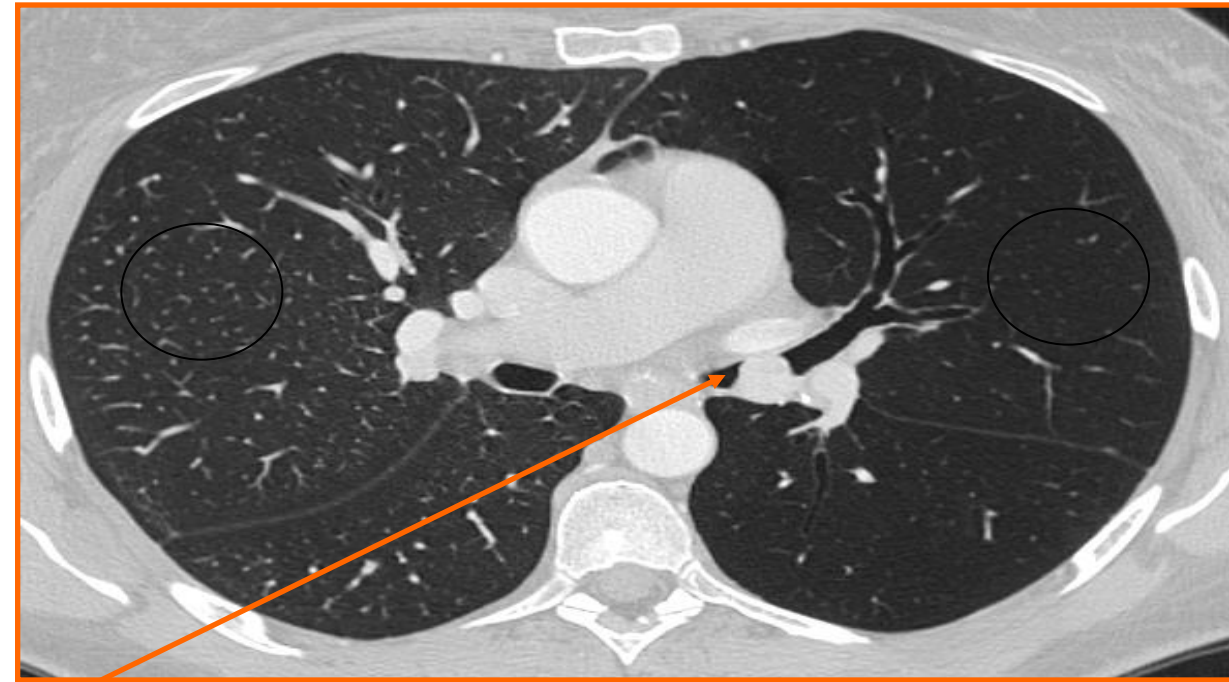




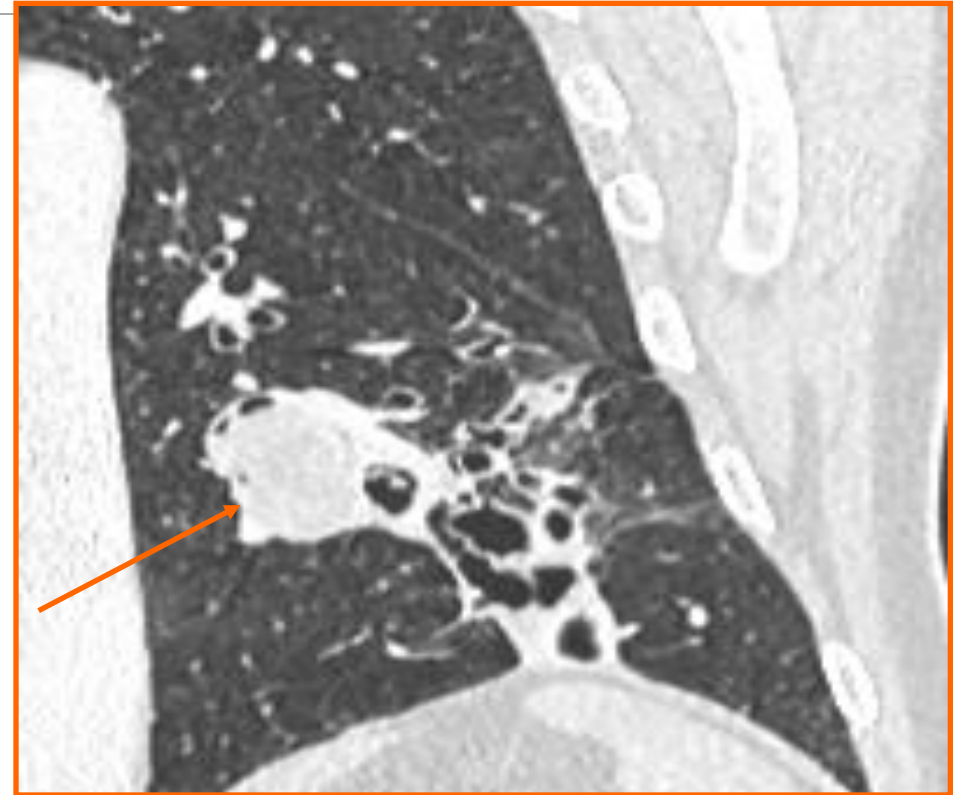
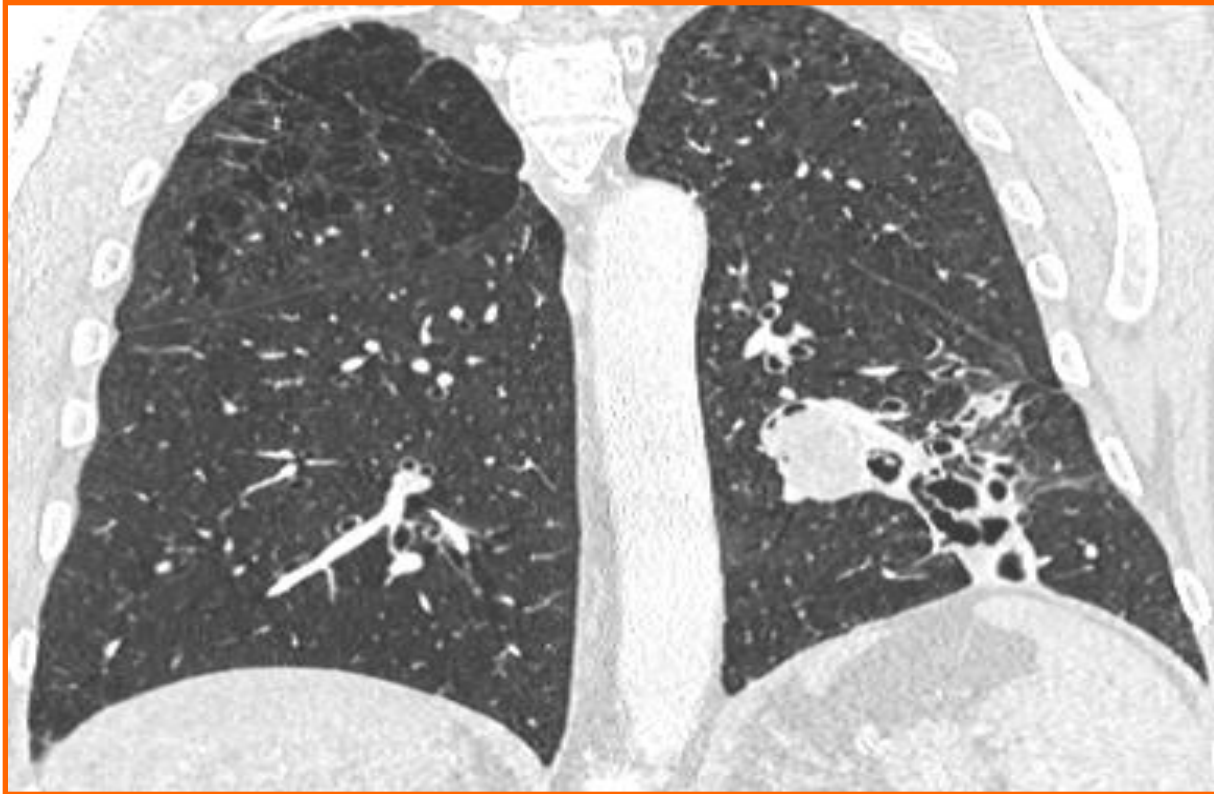
Central form

## 2- indirect pattern: « mosaïc » aspect

arterial vasoconstriction secondary to bronchial obstruction, hypoperfusion



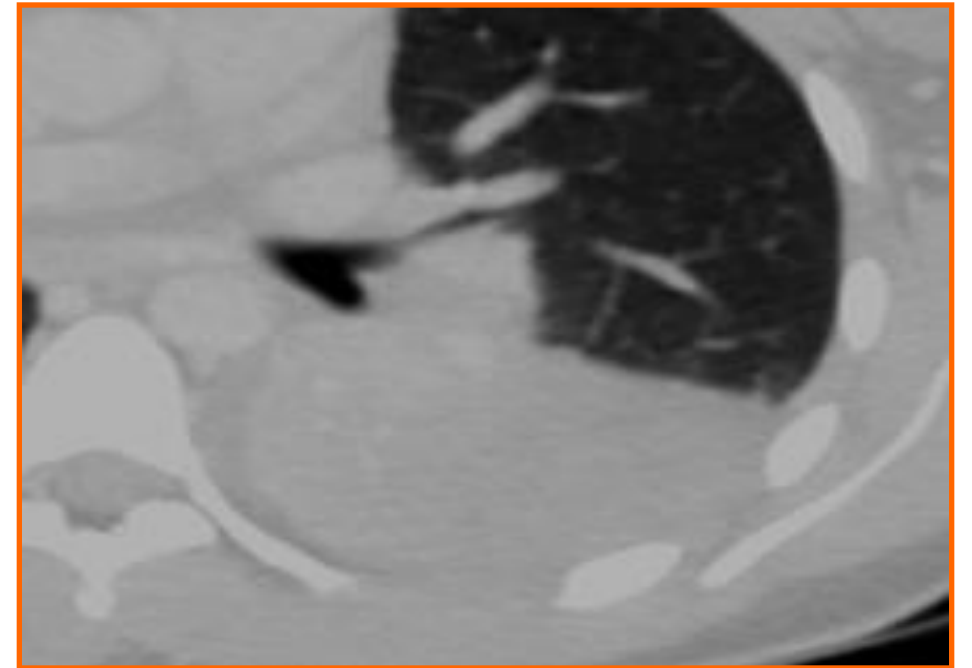
## 2- indirect pattern: downstream bronchiectasy



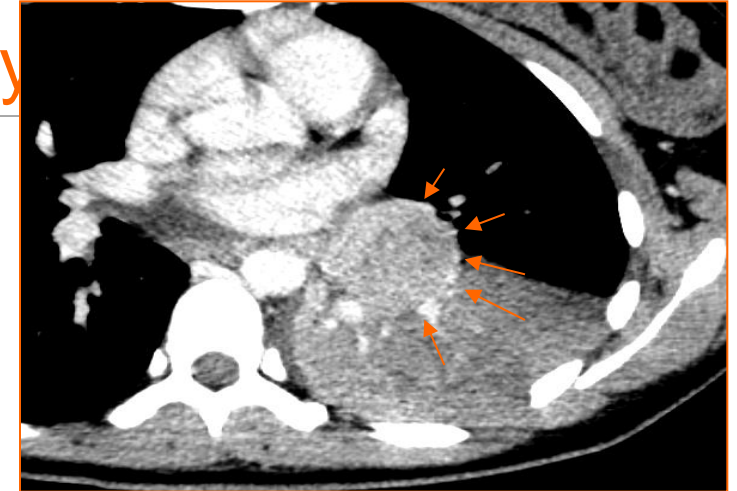
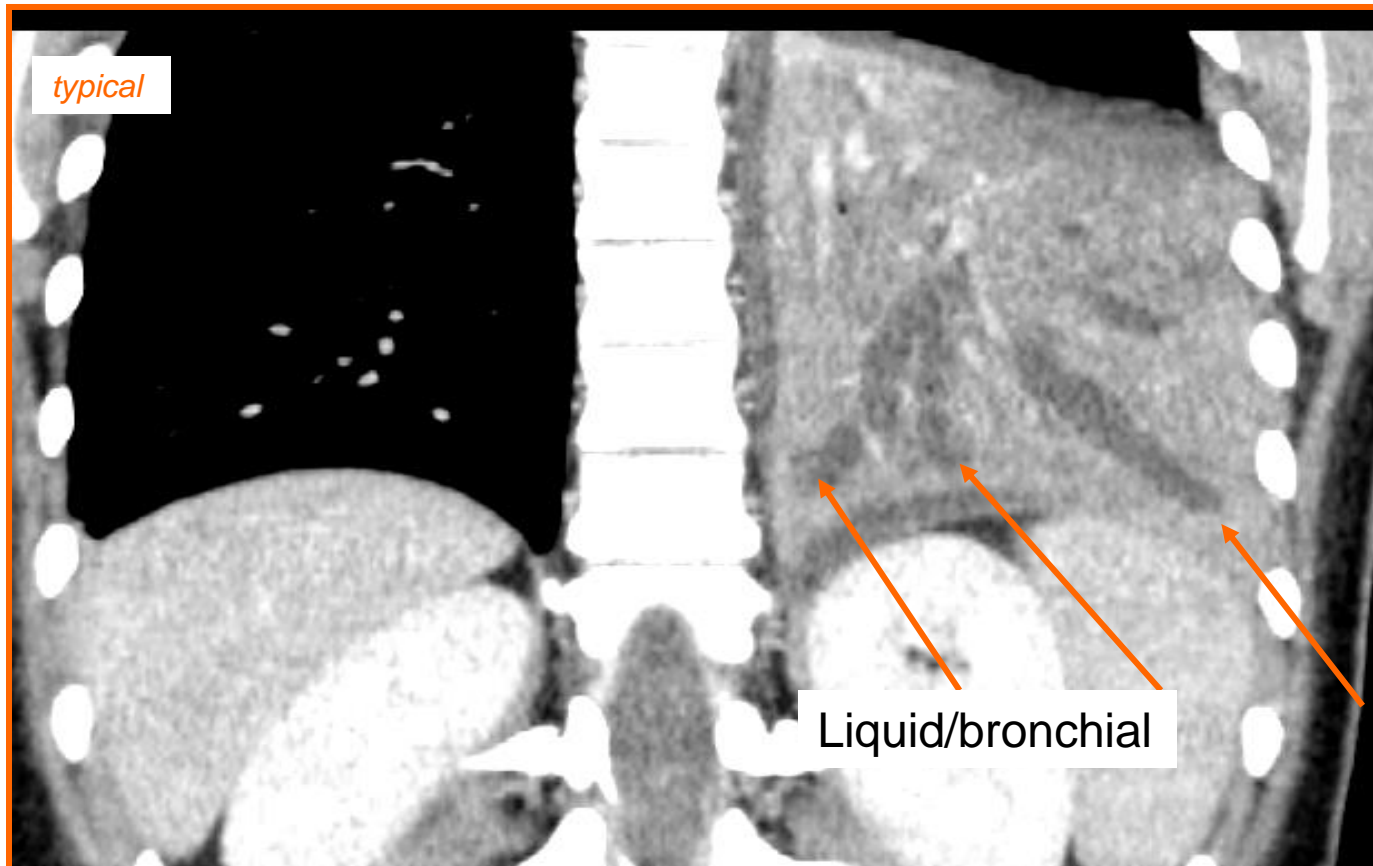


## 2- indirect pattern: Obstructive Pneumopathy

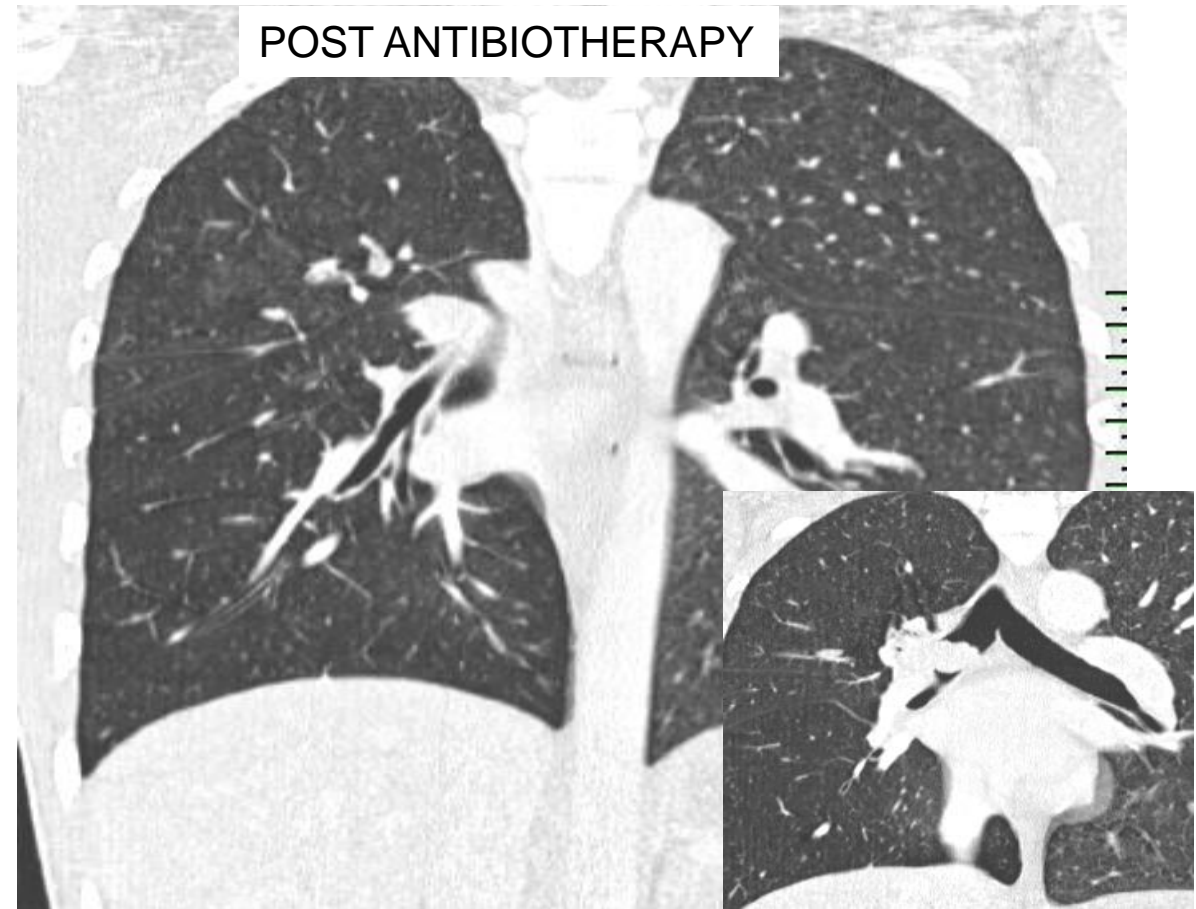
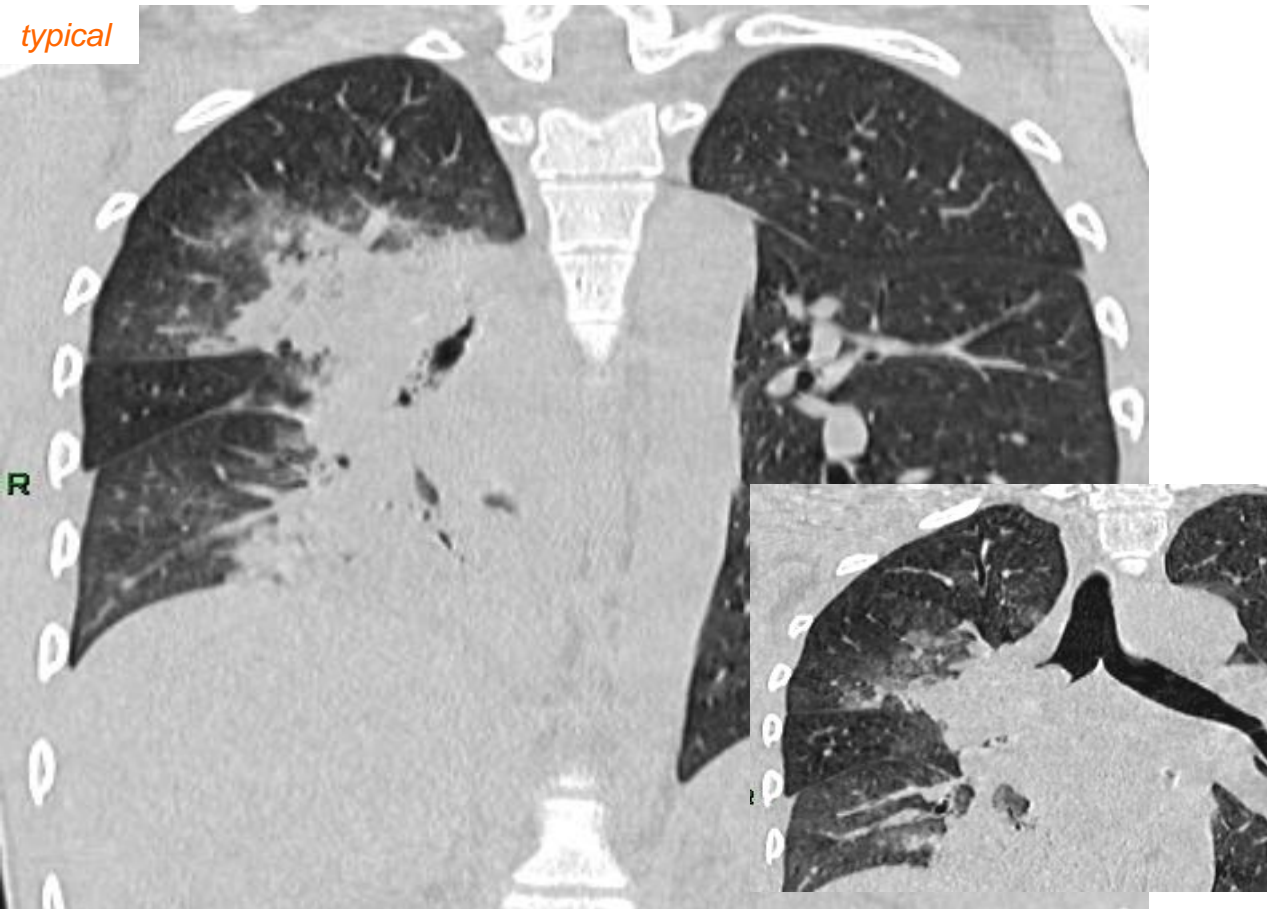
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## 2- indirect pattern: Obstructive Pneumopathy

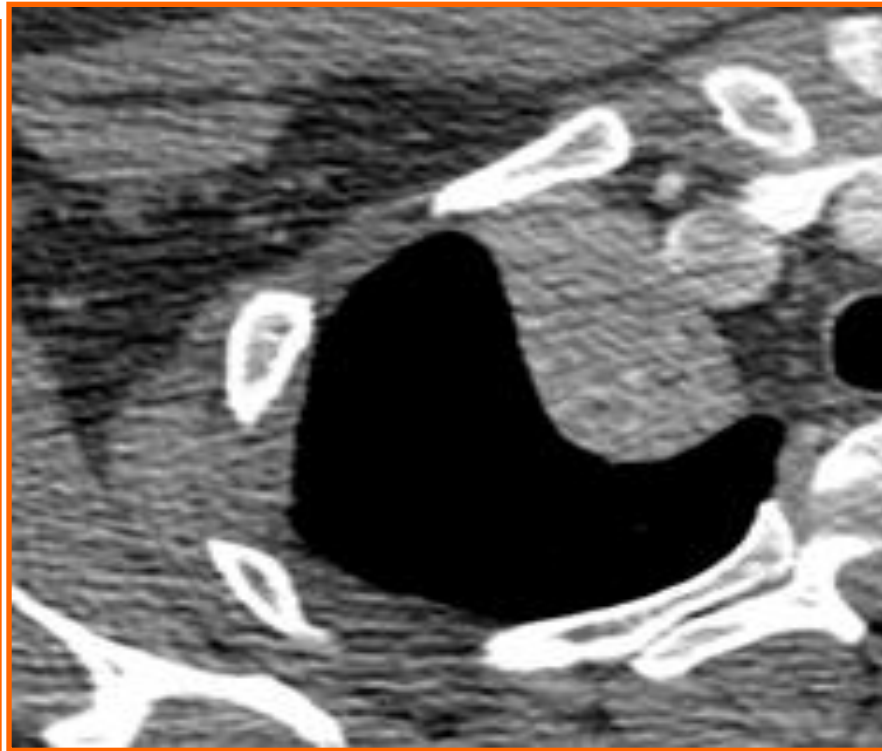
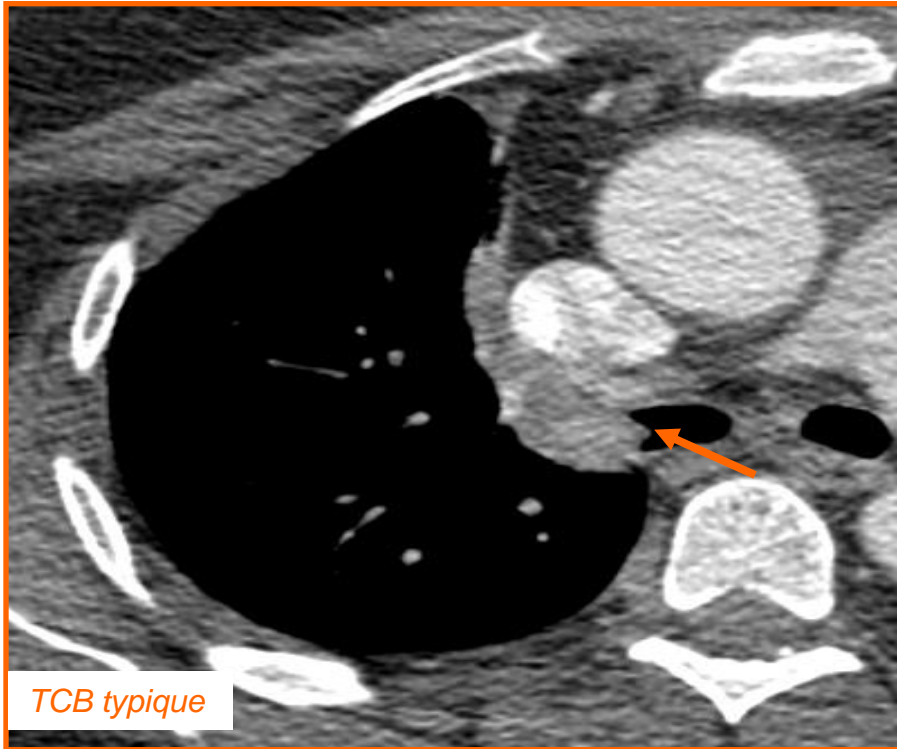


## 2- indirect pattern: Obstructive Pneumopathy





## 2- indirect pattern: Atelectasia

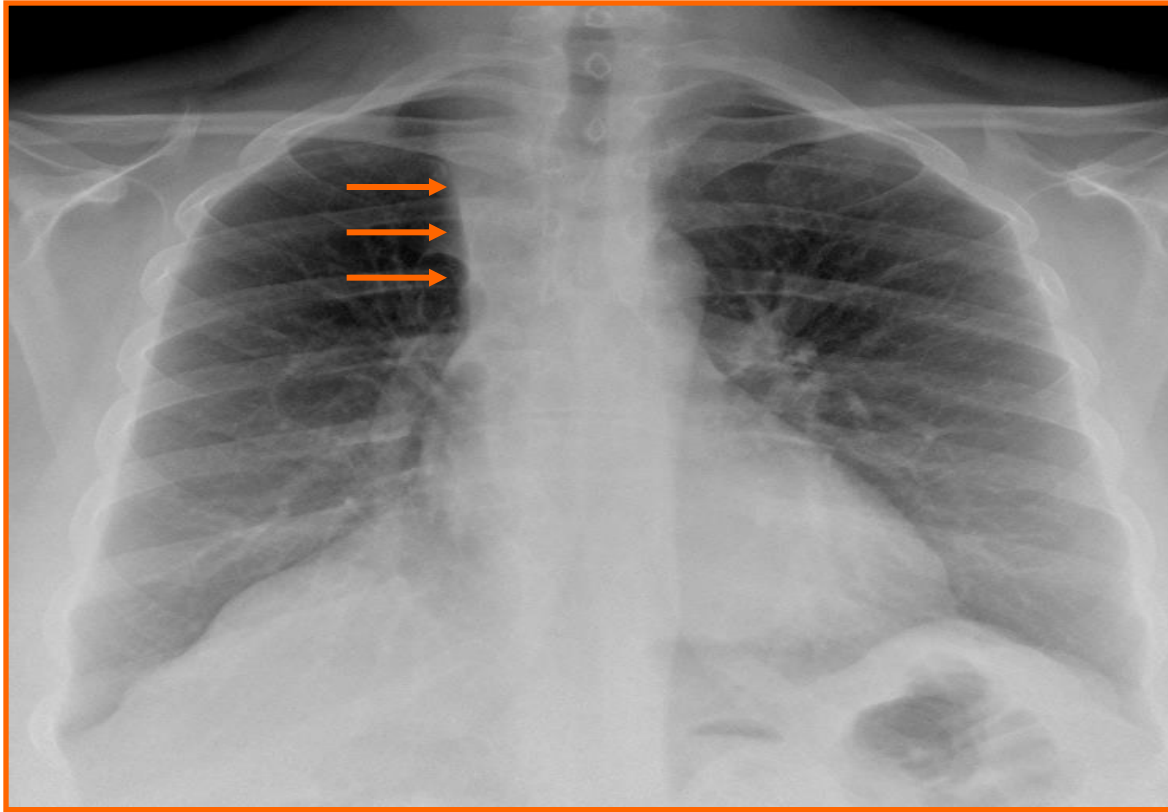


Total atelectasia of superior lobe  
isointense

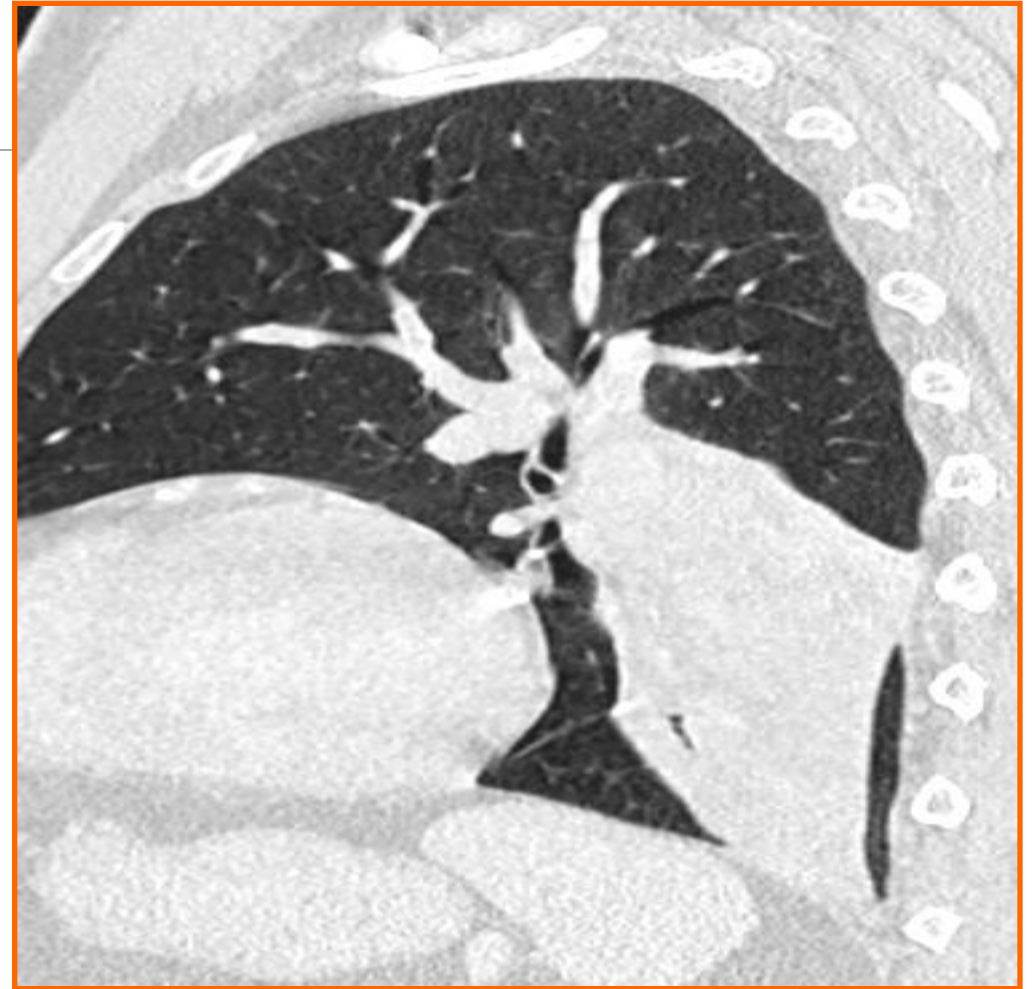
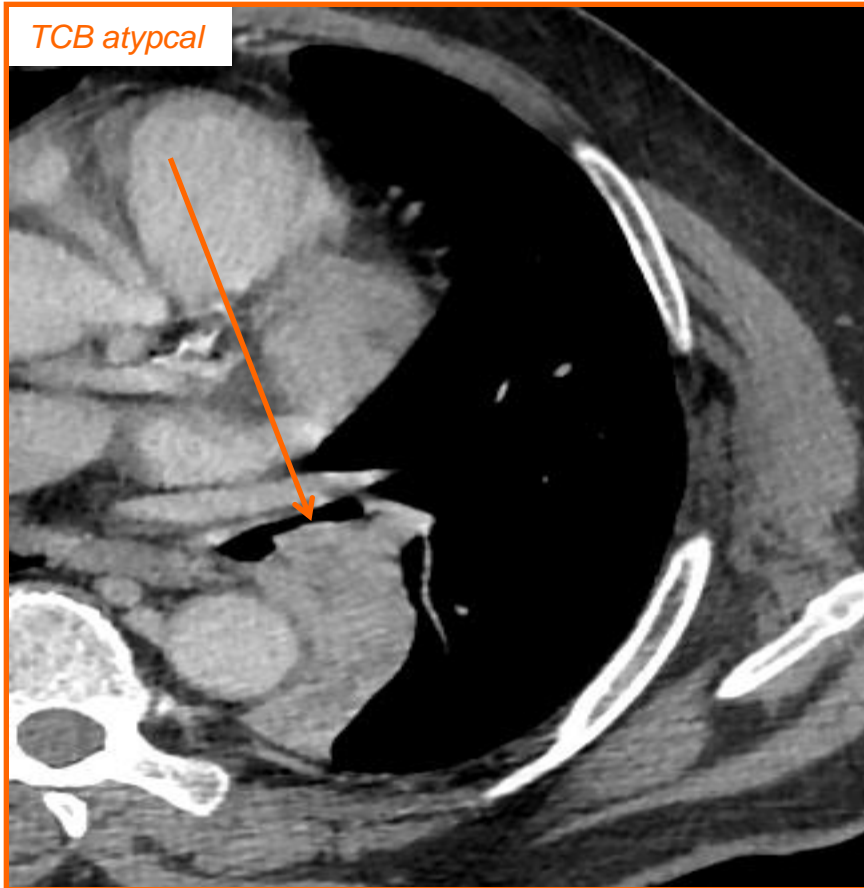
Central form

## 2- indirect pattern: Atelectasia

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## 2- indirect pattern: Atelectasia



# Technical aspect: 3 phases MDCT

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1. Unenhanced: calcifications.
2. Arterial phase (30 s post IV): hypervascular
3. Late phase (90 à 120 s post IV) non enhancing necrosis

To differentiate tumor and atelectasia

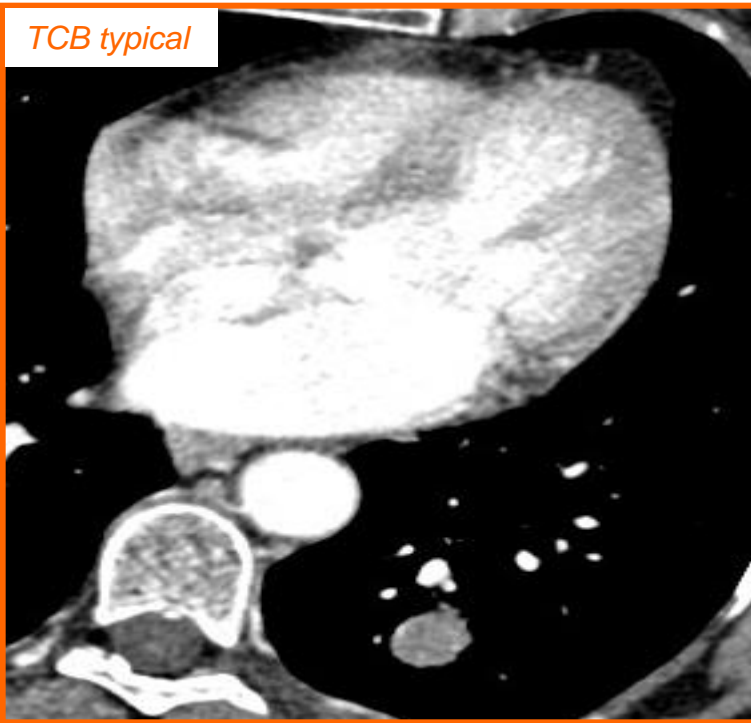
# Peripheral nodule: NET pattern

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- Well delineated, regular shape
- Normal surrounding parenchyma
- No fat (hamartoma)
- Calcifications unfrequent
- Stable or slow growing
- Small size
- Young
- non smoker



# Peripheral pattern



# Peripheral pattern

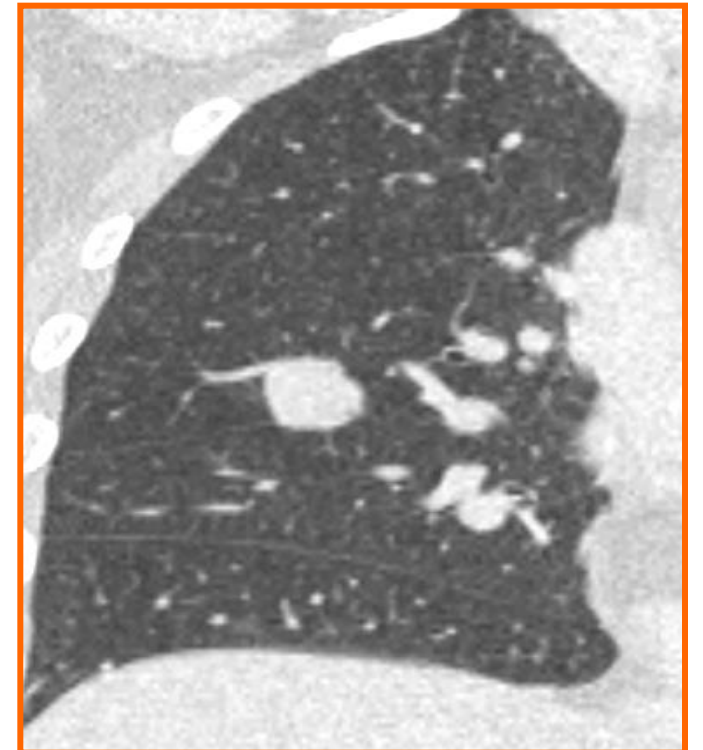
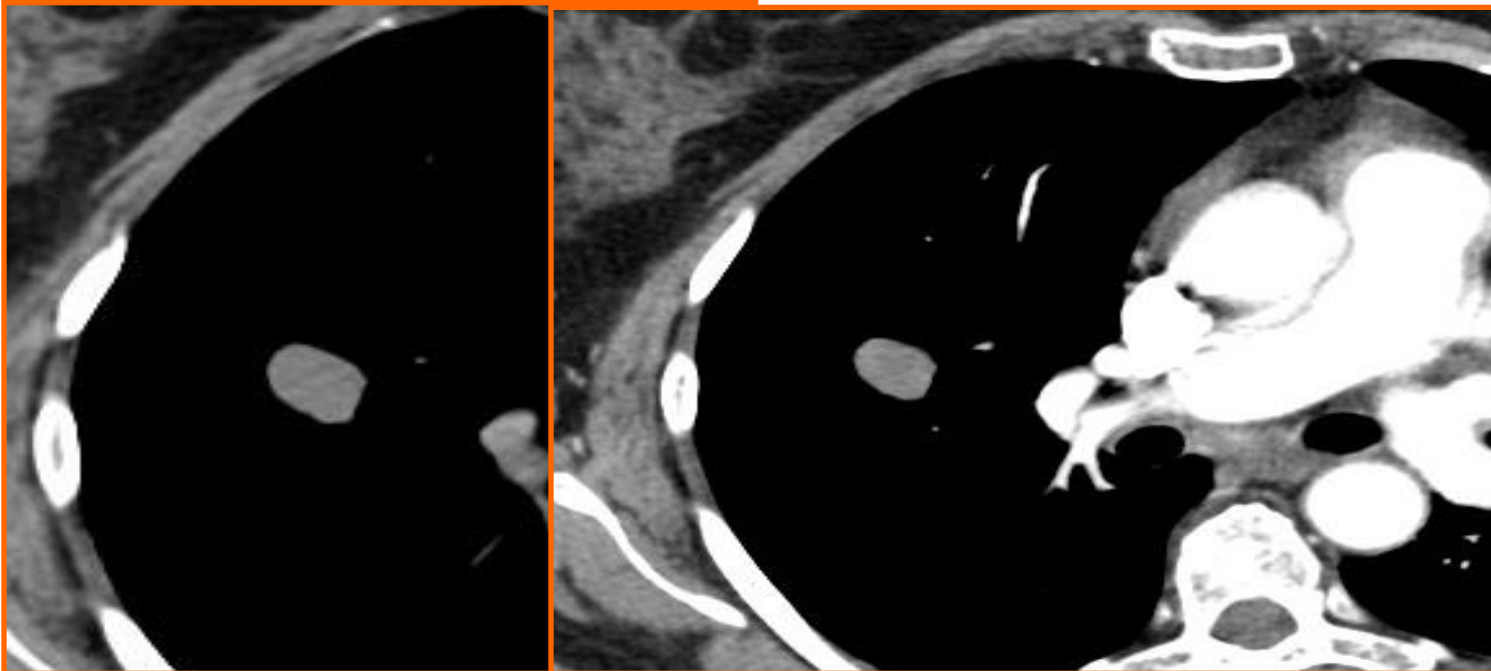
---

Biopsy: transcutaneous, CT

IV-

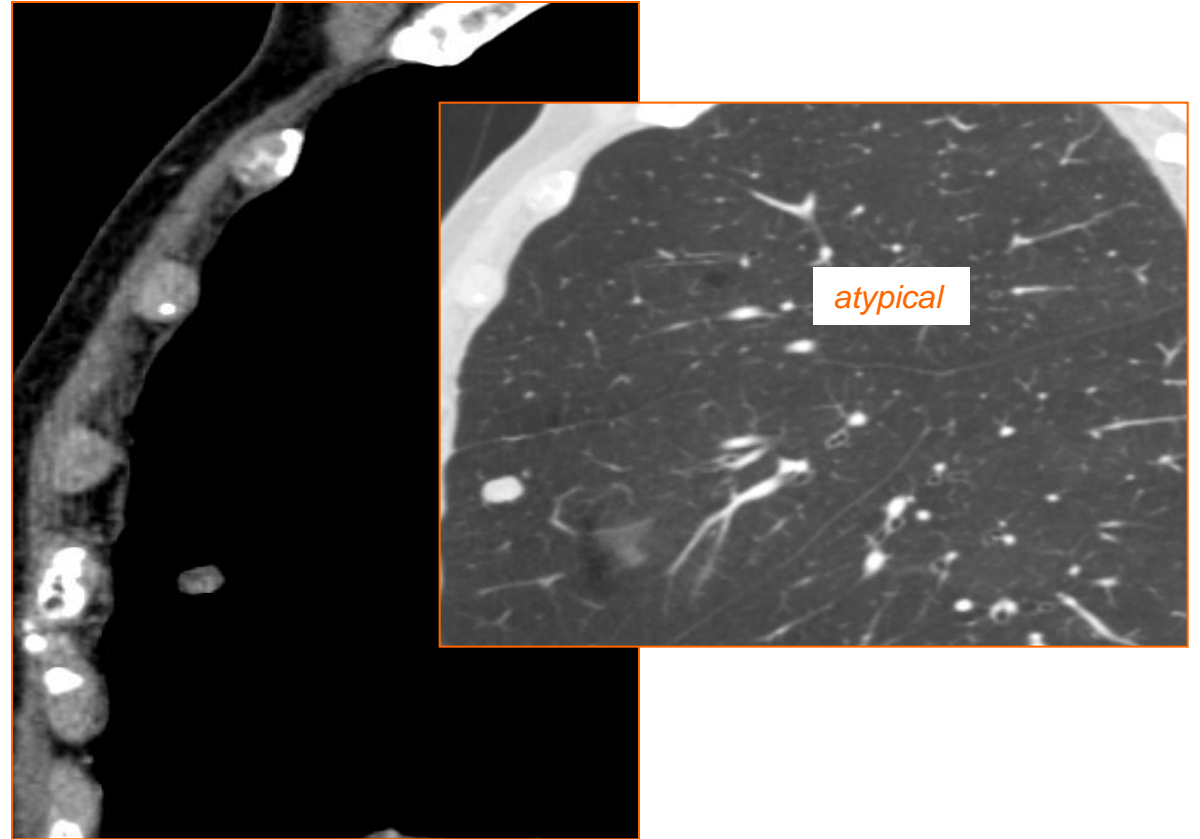
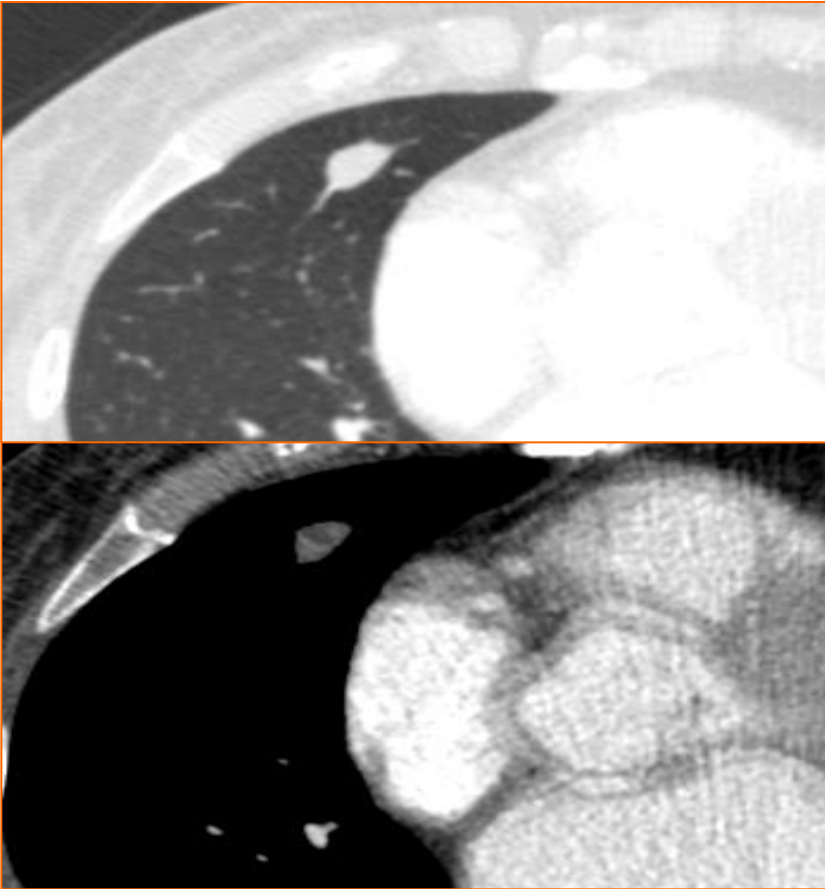
typical

IV+



# Peripheral pattern

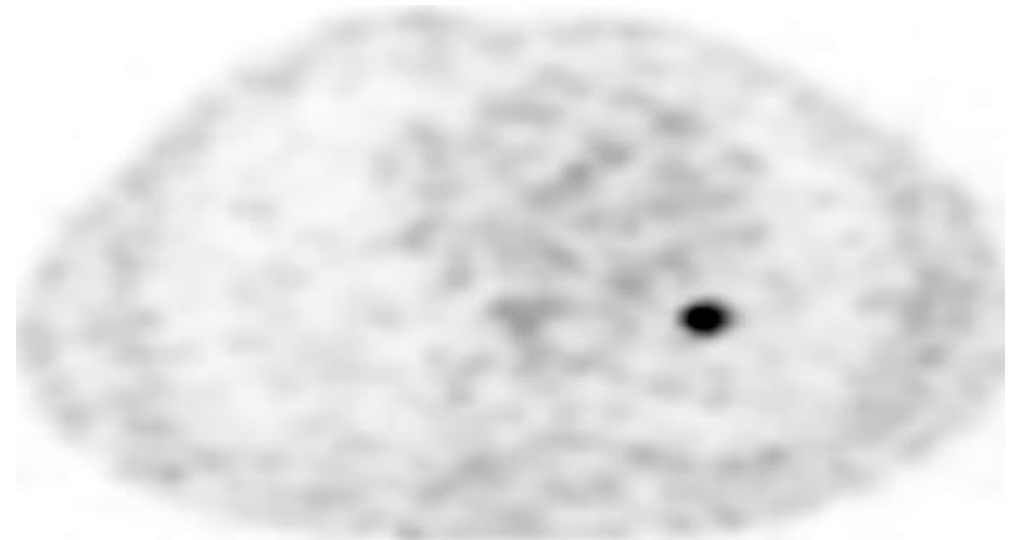
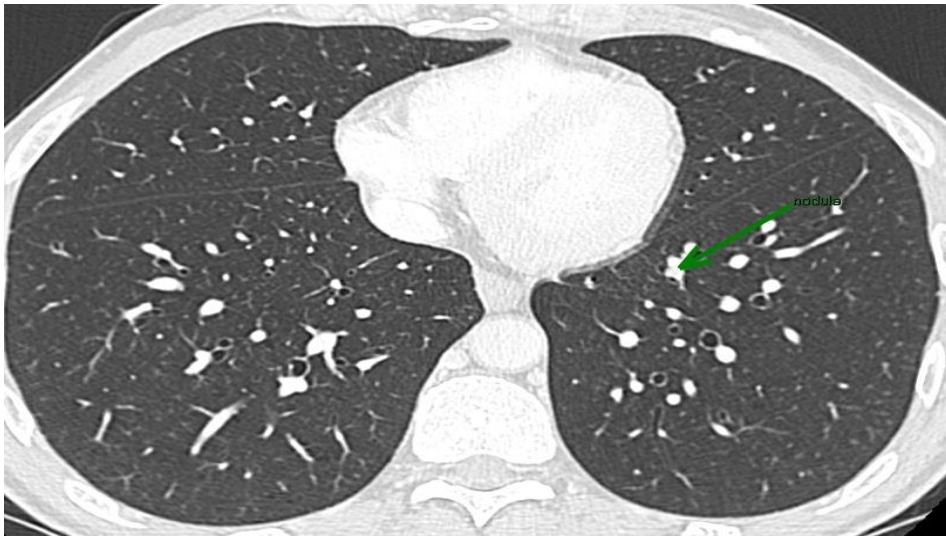
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# Pulmonary carcinoid tumor

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Gallium TEP



# AJCC staging for lung tumor NETs

## Primary tumor (T)

TX	Primary tumor cannot be assessed or tumor was proved by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy
T0	No evidence of primary tumor
T1	Tumor $\leq 3$ cm in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e. not in the main bronchus)
T1a	Tumor $\leq 2$ cm in greatest dimension
T1b	Tumor $\geq 2$ cm but $< 3$ cm in greatest dimension
T2	Tumor $\geq 3$ cm but $\leq 7$ cm or tumor with any of the following features (T2 tumors with these features are classified T2a if $\leq 5$ cm); involves main bronchus, $\geq 2$ cm distal to the carina; invades visceral pleura (PL1 or PL2); associated with atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung
T2a	Tumor $\geq 3$ cm but $\leq 5$ cm in greatest dimension
T2b	Tumor $\geq 5$ cm but $\leq 7$ cm in greatest dimension
T3	Tumor $\geq 7$ cm or one that directly invades any of the following: parietal pleural (PL3) chest wall (including superior sulcus tumors), diaphragm, phrenic nerve, mediastinal pleura, parietal pericardium; tumor in the main bronchus ( $< 2$ cm distal to the carina pleura, parietal pericardium; tumor in the main bronchus ( $< 2$ cm distal to the carina but without involvement of the carina); or associated atelectasis or obstructive pneumonitis of the entire lung or separate tumor nodule(s) in the same lobe

# TNM

## Regional lymph nodes (N)

NX

Regional lymph nodes cannot be assessed

N0

No regional lymph node metastases

N1

Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension

N2

Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)

## Distant metastasis (M)

M0

No distant metastasis

M1

Distant metastasis

M1a

Separate tumor nodule(s) in a contralateral lobe tumor with pleural nodules or malignant pleural (or pericardial) effusion

M1b

Distant metastasis (LIVER)

# Take home

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Most frequent young people pulmonary tumor

Bronchial obstruction

Endo bronchial hypervascular nodule

Typical and atypical: same pattern

Peripheral: frequently atypical

