# Persistent Pulmonary Sub-solid Nodular Opacities, NOT In the Spectrum of Adenocarcinoma

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# Subsolid opacities

- Pulmonary subsolid opacities commonly infectious or inflammatory in nature
  - Most  improve or resolve on short term follow-up
- Persistent subsolid nodular opacity particularly if growing → suspicious for early-stage lung adenocarcinoma
  - Resection may be indicated, without preoperative biopsy

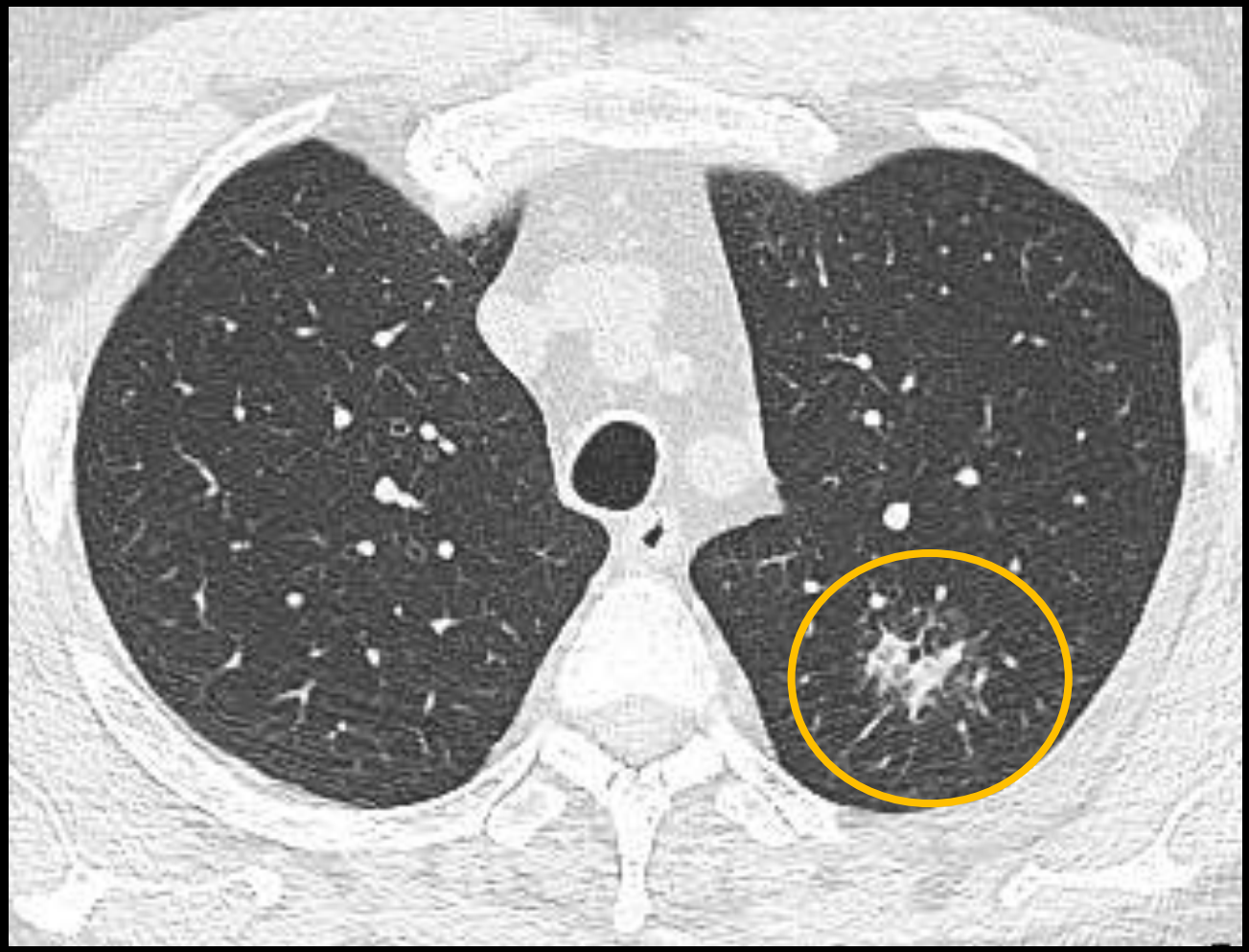
# Subsolid opacities

- Not all persistent/growing subsolid nodules are lesions in the spectrum of adenocarcinoma
- The purpose of this presentation is to discuss differential diagnosis of these lesions

# Case 1

# Case 1

- LUL part-solid lesion
- Persisted on short-term follow-up CT.
- CT-guided needle biopsy performed



Dx: Nodular lymphoid hyperplasia

Case 1

# Nodular lymphoid hyperplasia (NLH)

- Multidisciplinary discussion → imaging follow-up recommended
- Slow growth over two years on CT
- Repeat needle biopsy performed
- Pathology – possible low-grade B-cell lymphoma of mucosa-associated lymphoid tissue (MALT)
- Treatment - chemotherapy

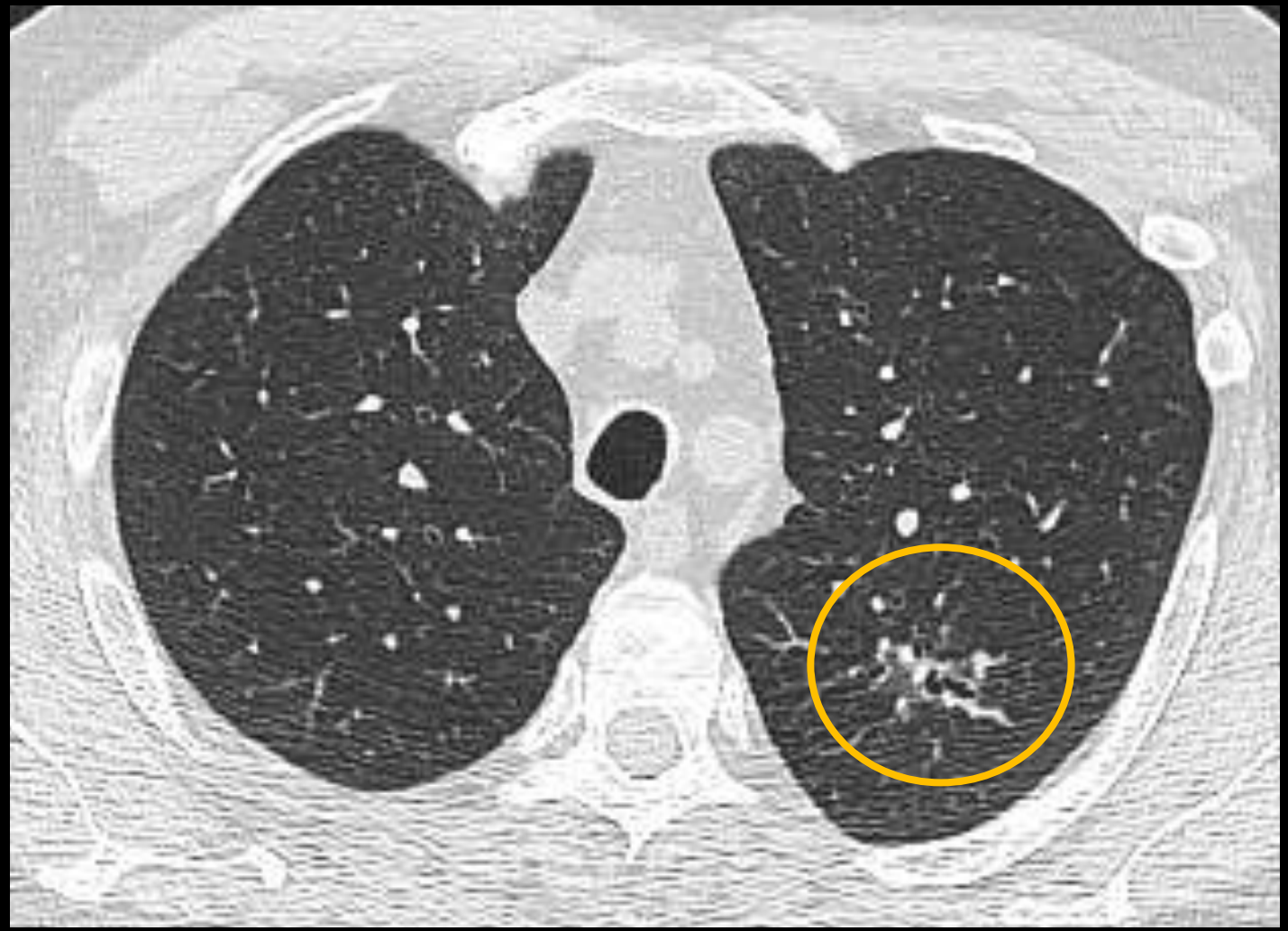
Case 1

# Nodular lymphoid hyperplasia (NLH)

- Uncommon
- Polyclonal lymphoid proliferation on benign non-neoplastic spectrum of pulmonary lymphoproliferative disorders
- Usually involves small area of lung - part-solid nodular or mass-like consolidation +/- limited surrounding interlobular septal thickening
- Other benign non-neoplastic lymphoproliferative diseases
  - Reactive lymphoid hyperplasia
  - Follicular bronchiolitis
  - Lymphoid interstitial pneumonia (LIP)

# Case 1

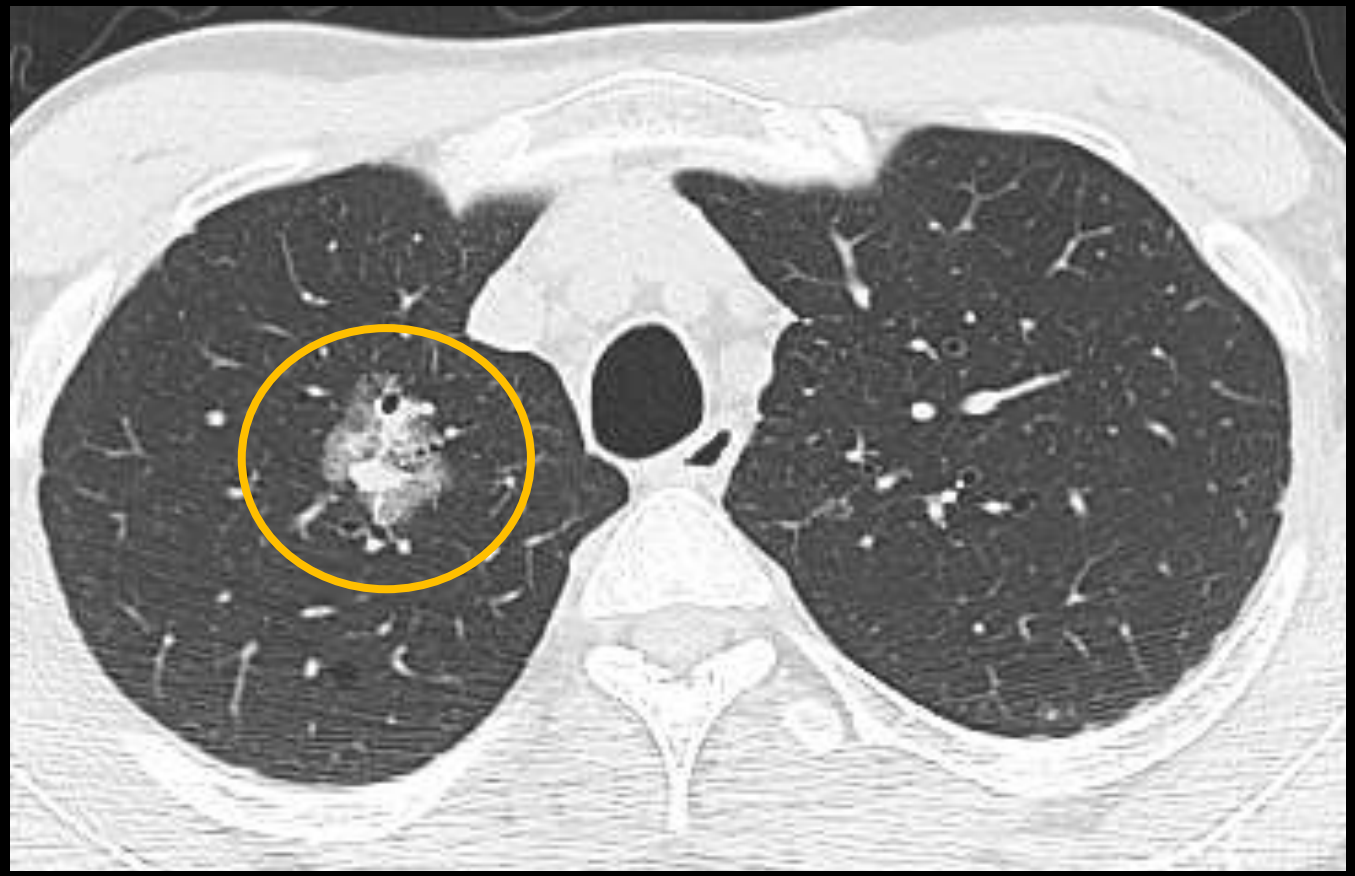
- Post-treatment follow-up



# Case 2

# Case 2

- Persistent RUL part-solid nodule
- There were also a few other scattered smaller pure ground glass nodules in this case.
- CT-guided needle biopsy preformed



Dx: B cell lymphoma of mucosa-associated lymphoid tissue (MALT)

Case 2

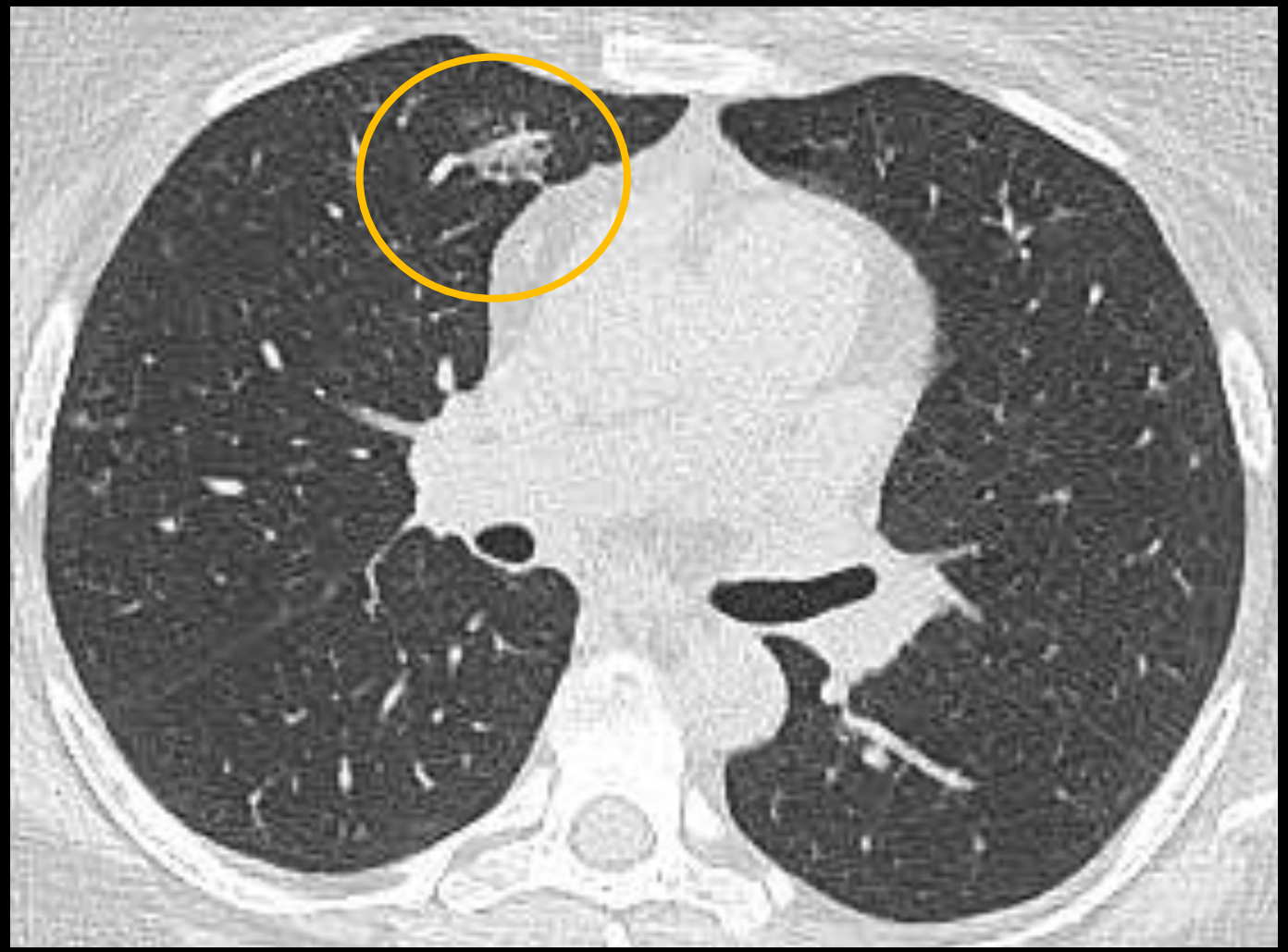
# Low-grade B-cell lymphoma of MALT

- Monoclonal lymphoid proliferation
- Invasion of bronchial epithelium by lymphoid cells → lymphoepithelial lesion
- Lymphangitic spread at periphery of lesion
- Bone marrow involvement uncommon
- Monoclonal gammopathy can be seen
- Imaging findings - multiple nodules, masses, and/or consolidation
- Other neoplastic pulmonary lymphoproliferative disorders
  - Non-Hodgkin lymphoma
  - Hodgkin lymphoma

# Case 3

# Case 3

- Persistent RUL part-solid nodule
- CT-guided needle biopsy
- Path - lymphoplasmacytic infiltration



Dx: IgG4 related disease

Case 3

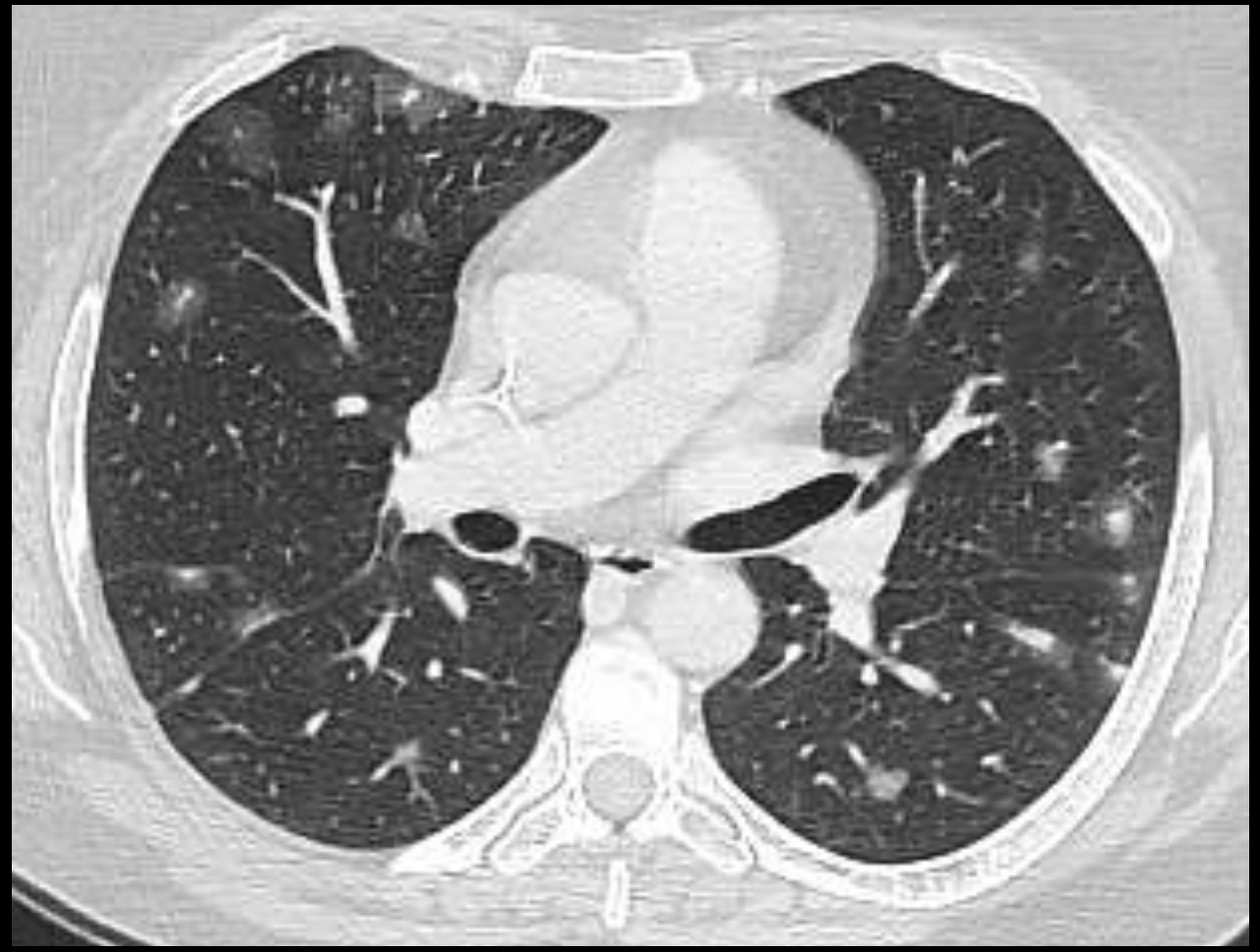
# Pulmonary IgG4-related disease

- May involve multiple organs
  - In chest, can involve lung parenchyma, airways,  pleura and mediastinum
- Thoracic manifestations
  - Mass, small or large nodules, groundglass opacity (GGO), thickening of bronchovascular bundles and thickening of interlobular septa
- Pathology - lymphoplasmacytic infiltration containing numerous IgG4-positive plasma cells (inflammatory pseudotumors (plasma cell granulomas)
  - Associated fibrosis, eosinophilic infiltration, obliterative phlebitis and angiitis also seen

# Case 4

# Case 4

- Multiple part-solid nodules
- Biopsy of pelvic mass invading right iliosacral bone - angiosarcoma
- Subpleural mass developed on follow-up
- Bx - metastatic angiosarcoma



Dx: Metastatic angiosarcoma

Case 4

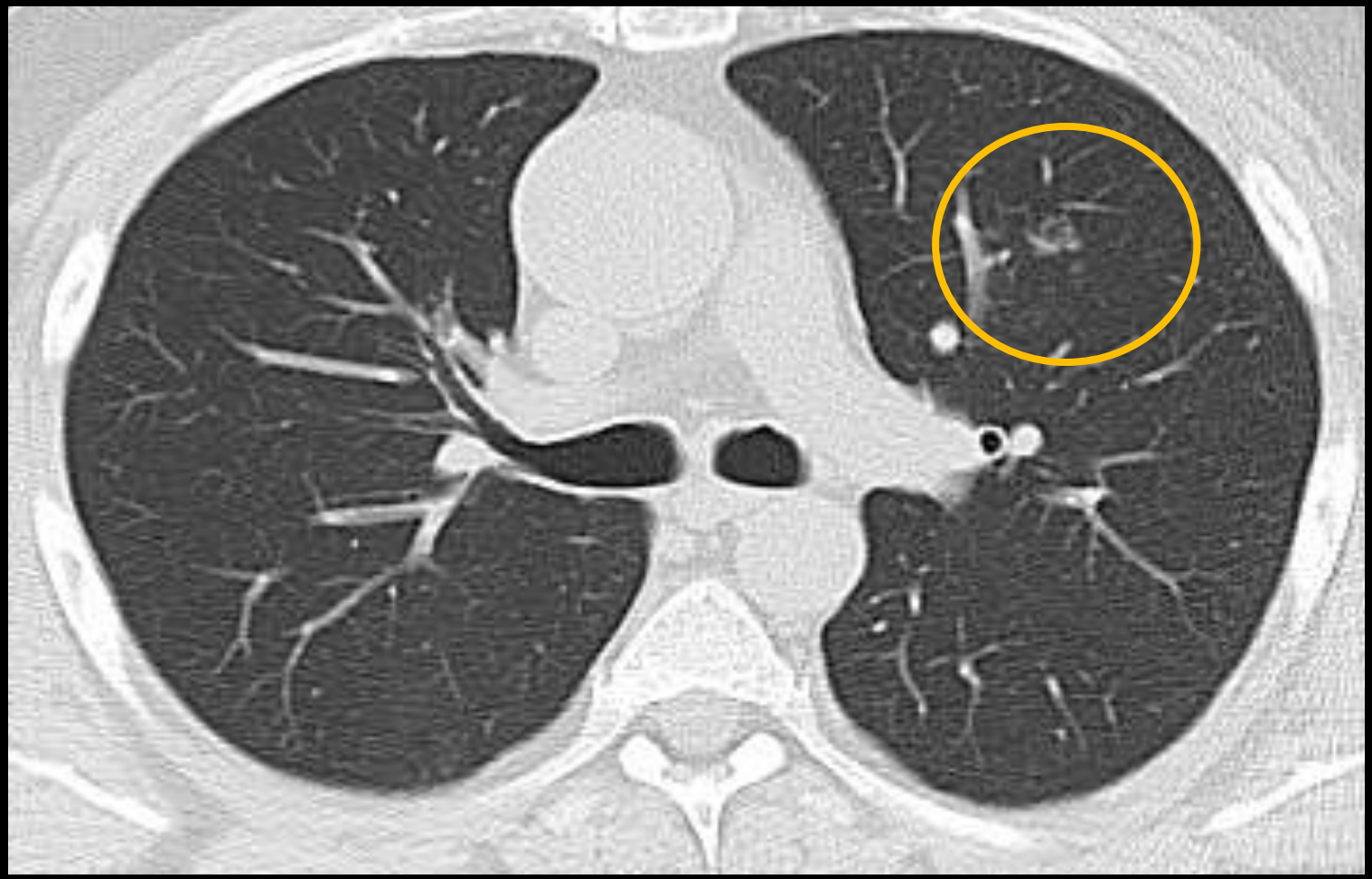
# Metastatic Angiosarcoma

- Multiple solid nodules most common
- Ground-glass attenuation surrounding solid nodules due to alveolar hemorrhage
- Ground glass opacities can be disproportionately larger than solid nodules and may wax and wane
- Thin-walled cysts can occur – may rupture and cause pneumothorax or hemothorax if subpleural in location

# Case 5

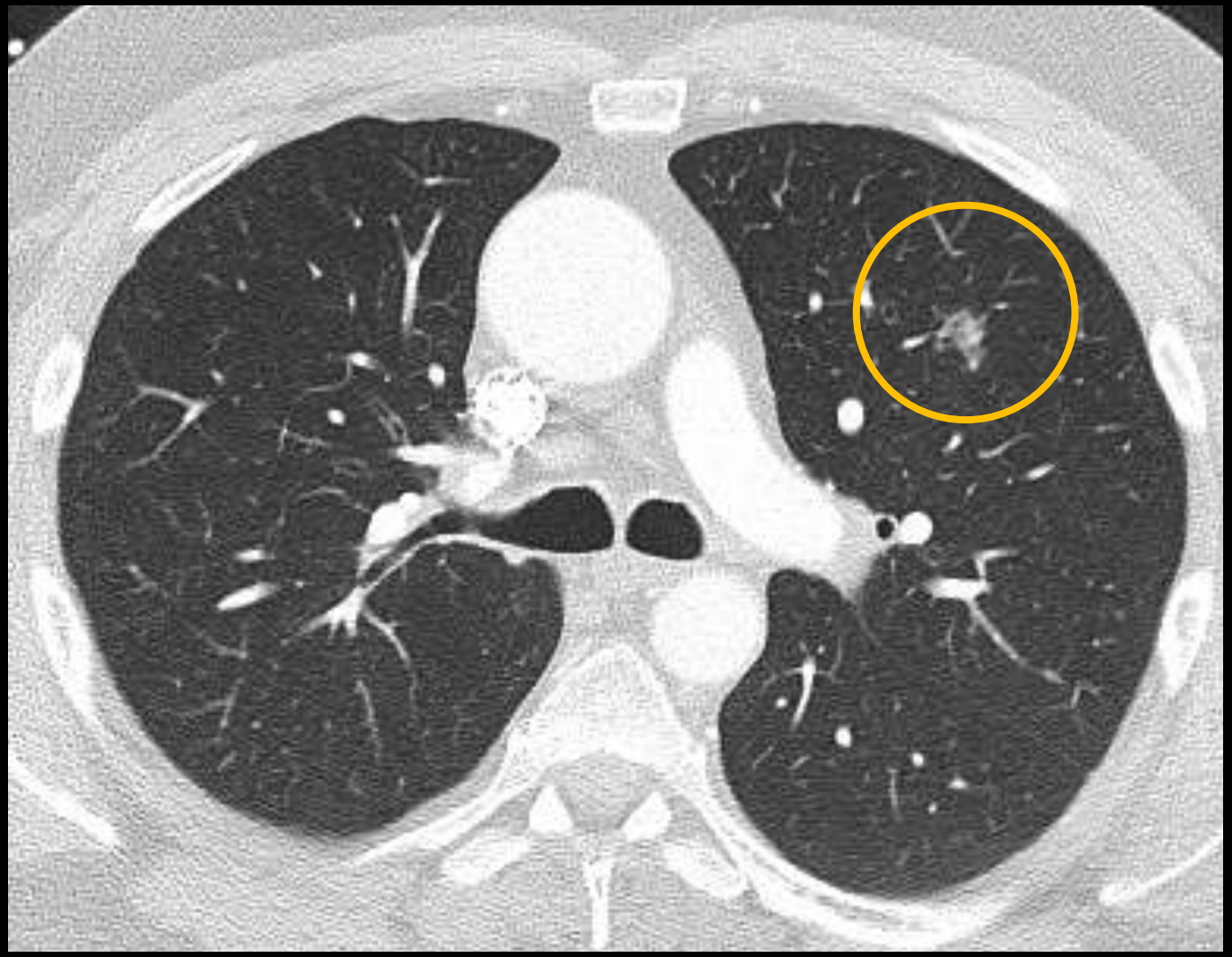
# Case 5

- LUL GGO



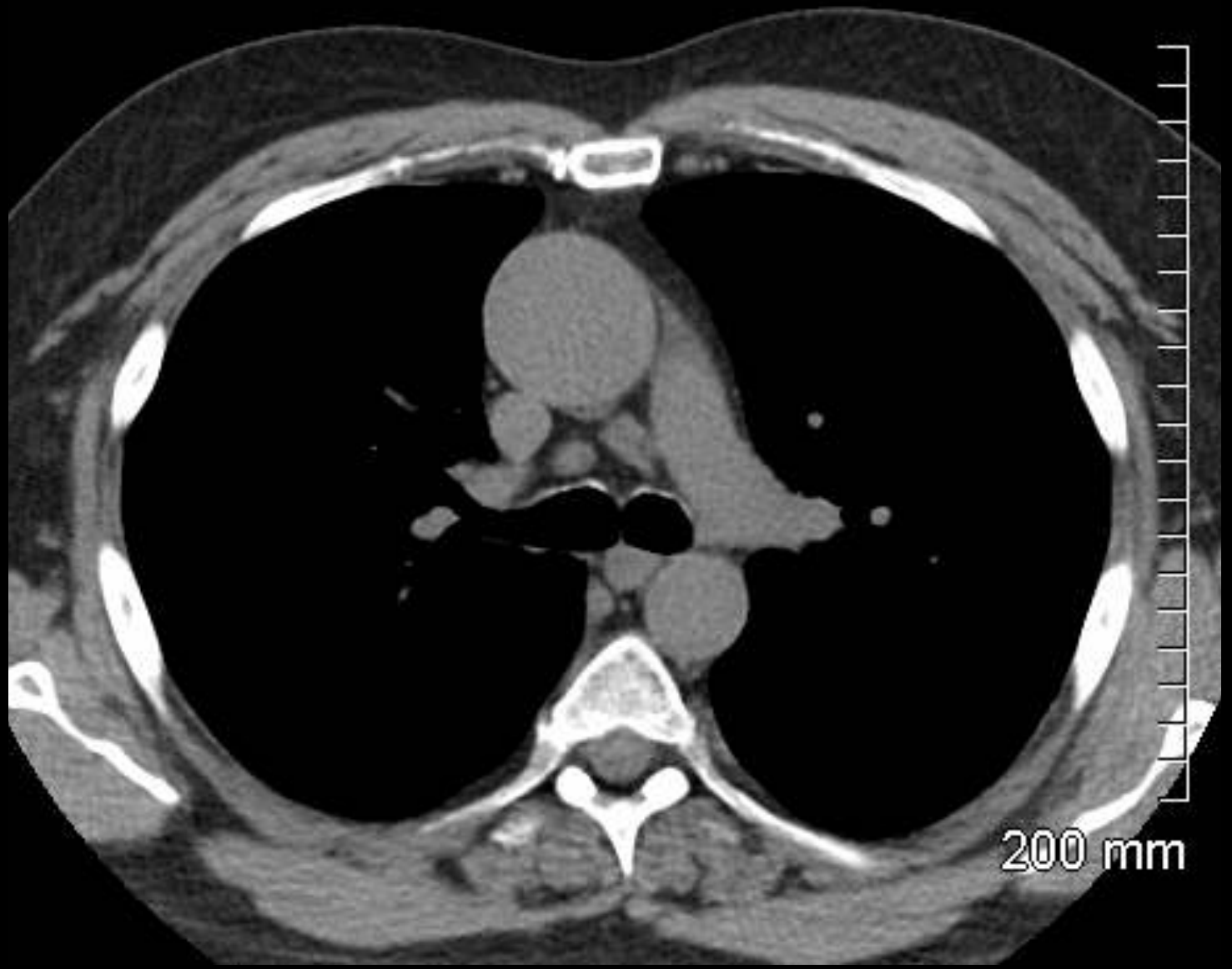
# Case 5

- Interval growth on short-term follow-up
- Few other similar but much smaller lesions noted



# Case 5

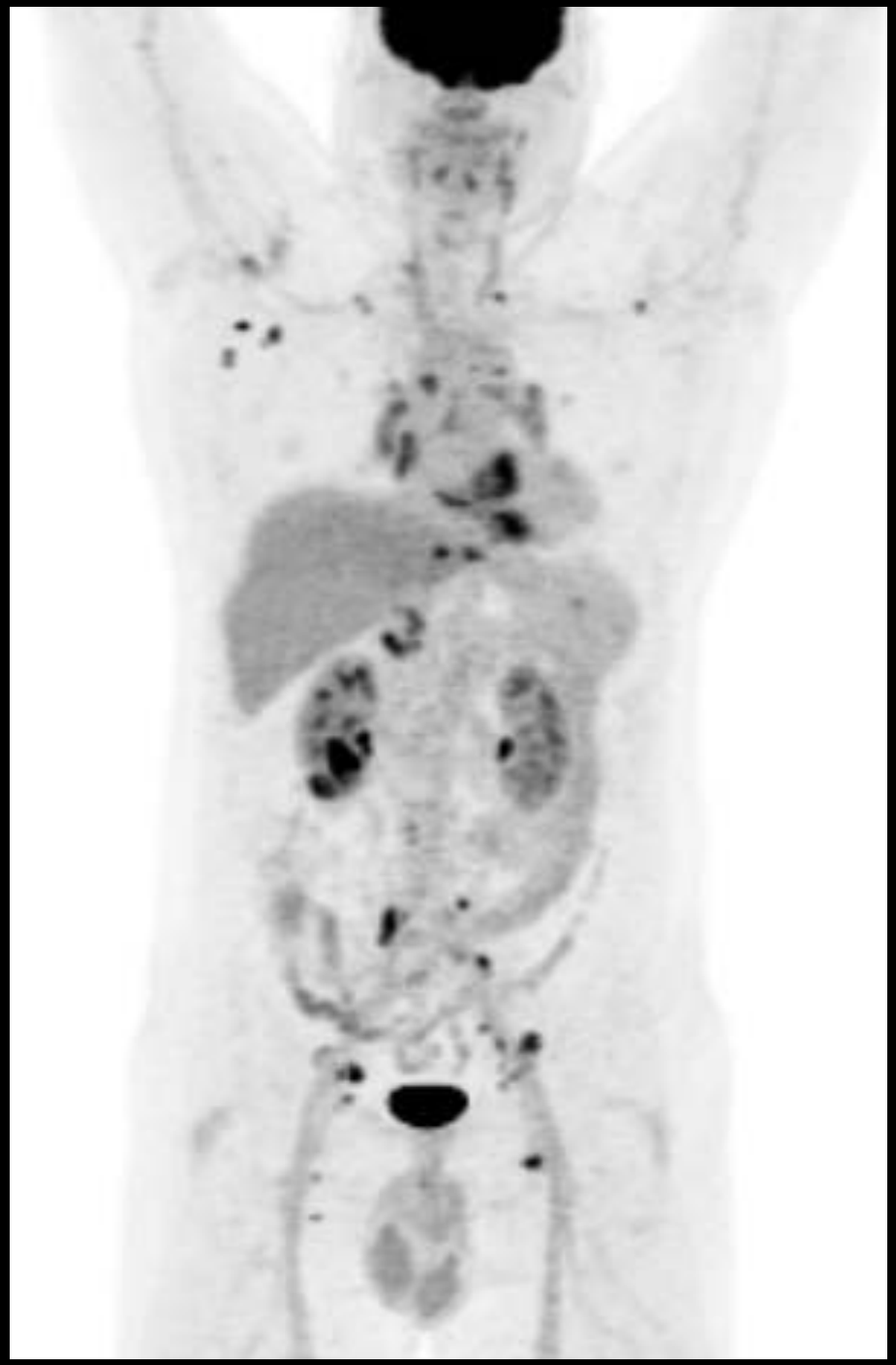
- Few small mediastinal lymph nodes
- No hilar or mediastinal lymphadenopathy



# Case 5

- FDG-PET - multiple small hypermetabolic lymph nodes
- LUL lesion resected after pre-operative coil localization
- Path – non-caseating granuloma

Dx: Sarcoidosis



Case 5

# Sarcoidosis

- Typical thoracic imaging findings
  - Symmetric hilar and mediastinal lymphadenopathy and pulmonary perilymphatic nodules
- Pulmonary ground glass and airspace nodular opacities can be seen → due to interstitial infiltration at pathology

# Differential Diagnosis

- Common differential diagnosis of single (or multiple) persistent pulmonary ground glass or part-solid lesions, other than lesions in the spectrum of adenocarcinoma
  - Scar
  - Lymphoproliferative disorders
  - IgG4 related disease
  - Sarcoidosis

# Summary

- No all, but most persistent sub-solid lung lesions are primary lung adenocarcinoma → resection is indicated.
- In appropriate clinical setting, when patient's young age or when other clinical findings or imaging features of a sub-solid lung lesion suggest alternative diagnosis adenocarcinoma, image-guided transthoracic needle biopsy prior to management can be considered.

# References


- Case 1 and case 2:

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- Case 4:

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- Case 5:

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# THANK YOU

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