Chief Complain

- For chemotherapy

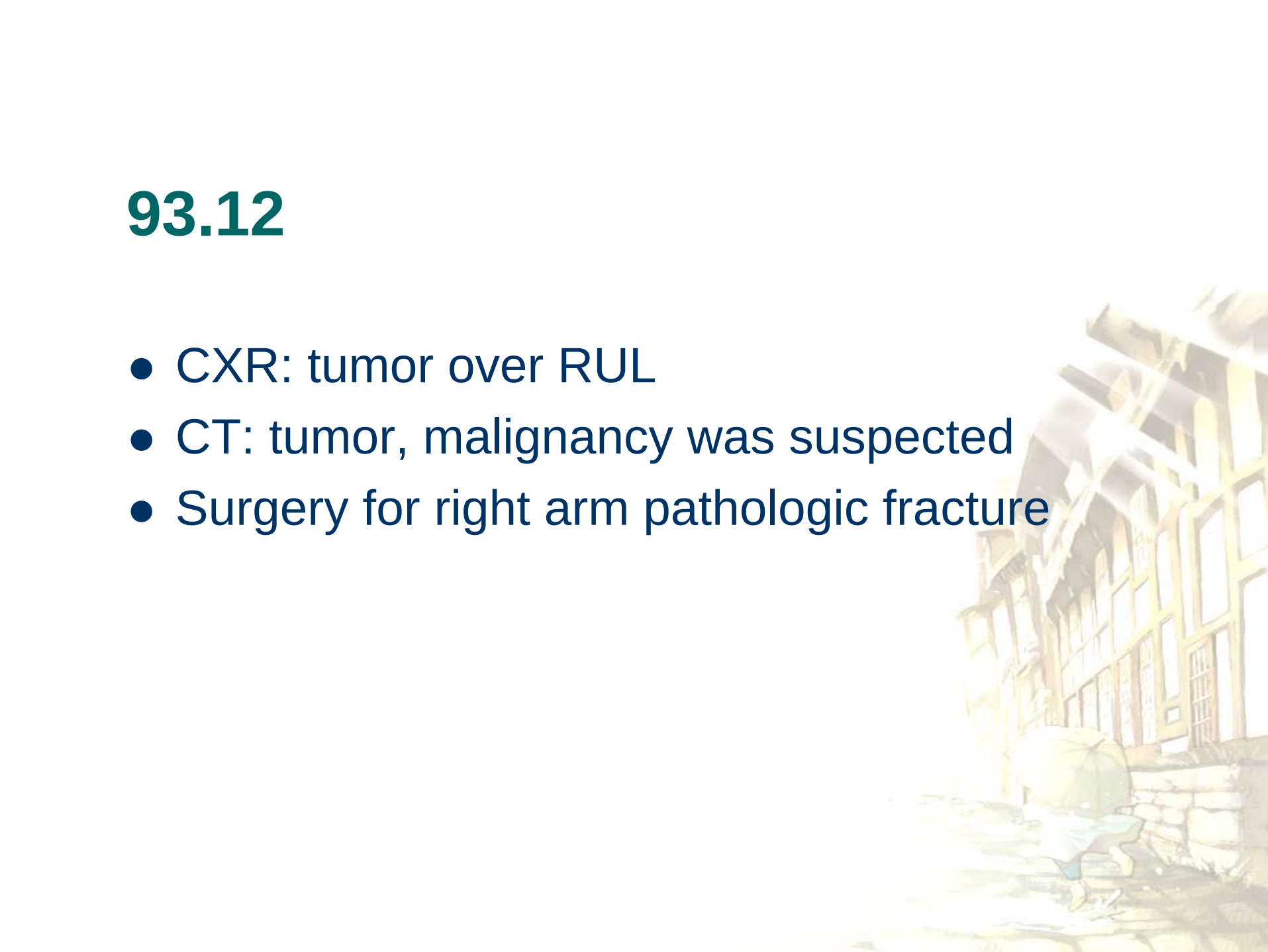
Present Illness

93.12

- Progressive weakness of R’t arm for 1 year
- X-ray: peneative lesion over right proximal humorous
- Bone scan: multiple increased intake
- Biopsy of distal and proximal of right humerous: malignancy

93.12

- CXR: tumor over RUL
- CT: tumor, malignancy was suspected
- Surgery for right arm pathologic fracture



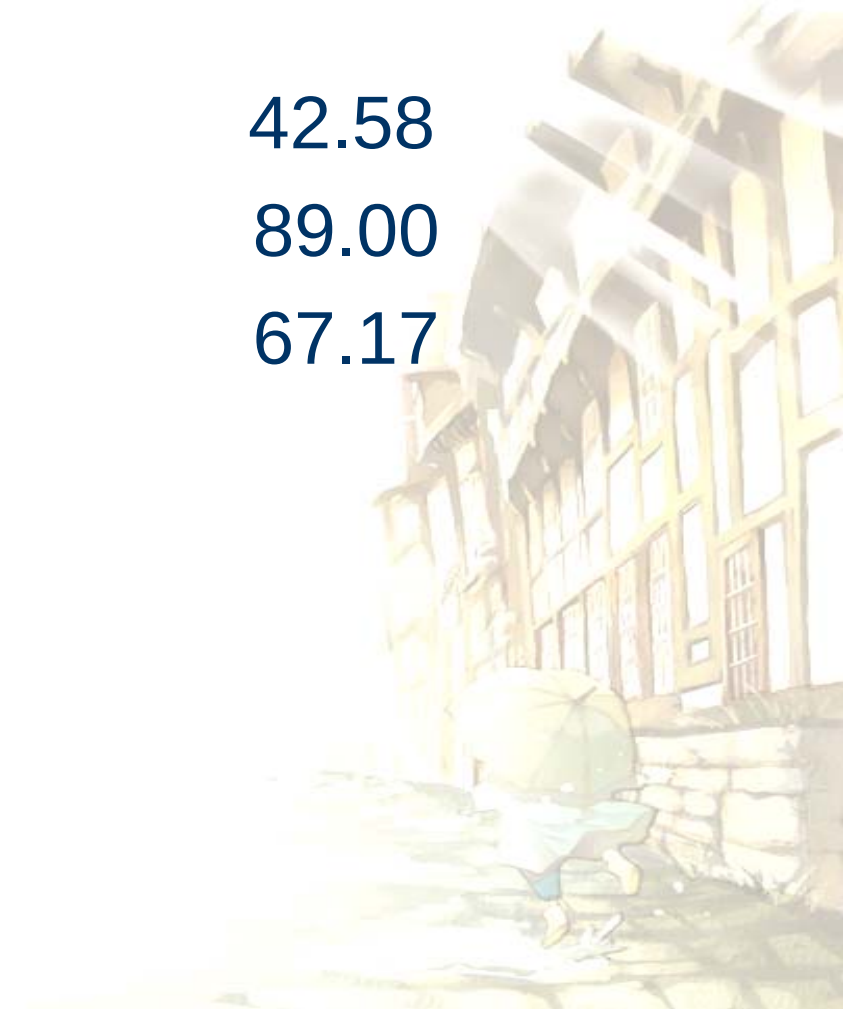
Past history

- Medication history:
- Acute HBV
- Pulmonary embolism after the surgery

- Surgical history:
- Fracture of left wrist s/p op
- Pathologic fracture of right humer s/p op

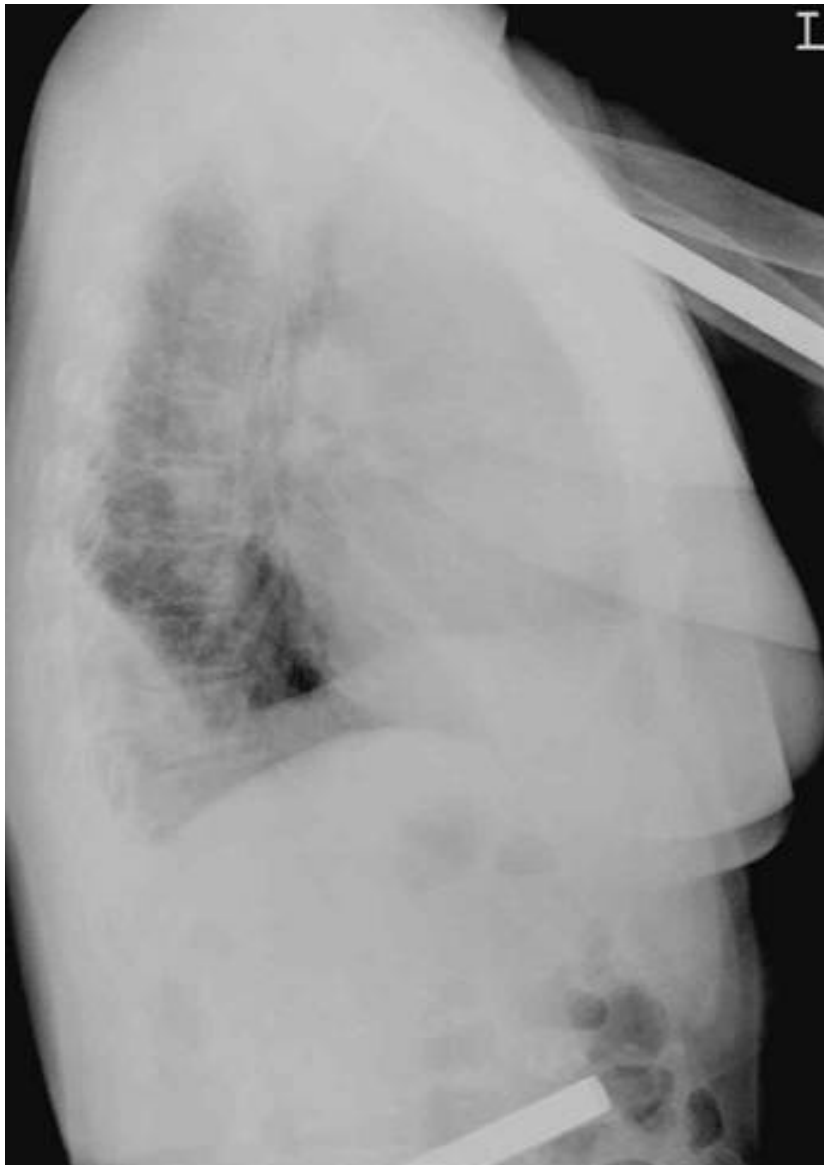
Laboratory

- CEA (血液) [<4.6 ng/ml] 42.58
- CA125 (血液) [<35 U/ml] 89.00
- CA153 (血液) [<28 U/ml] 67.17



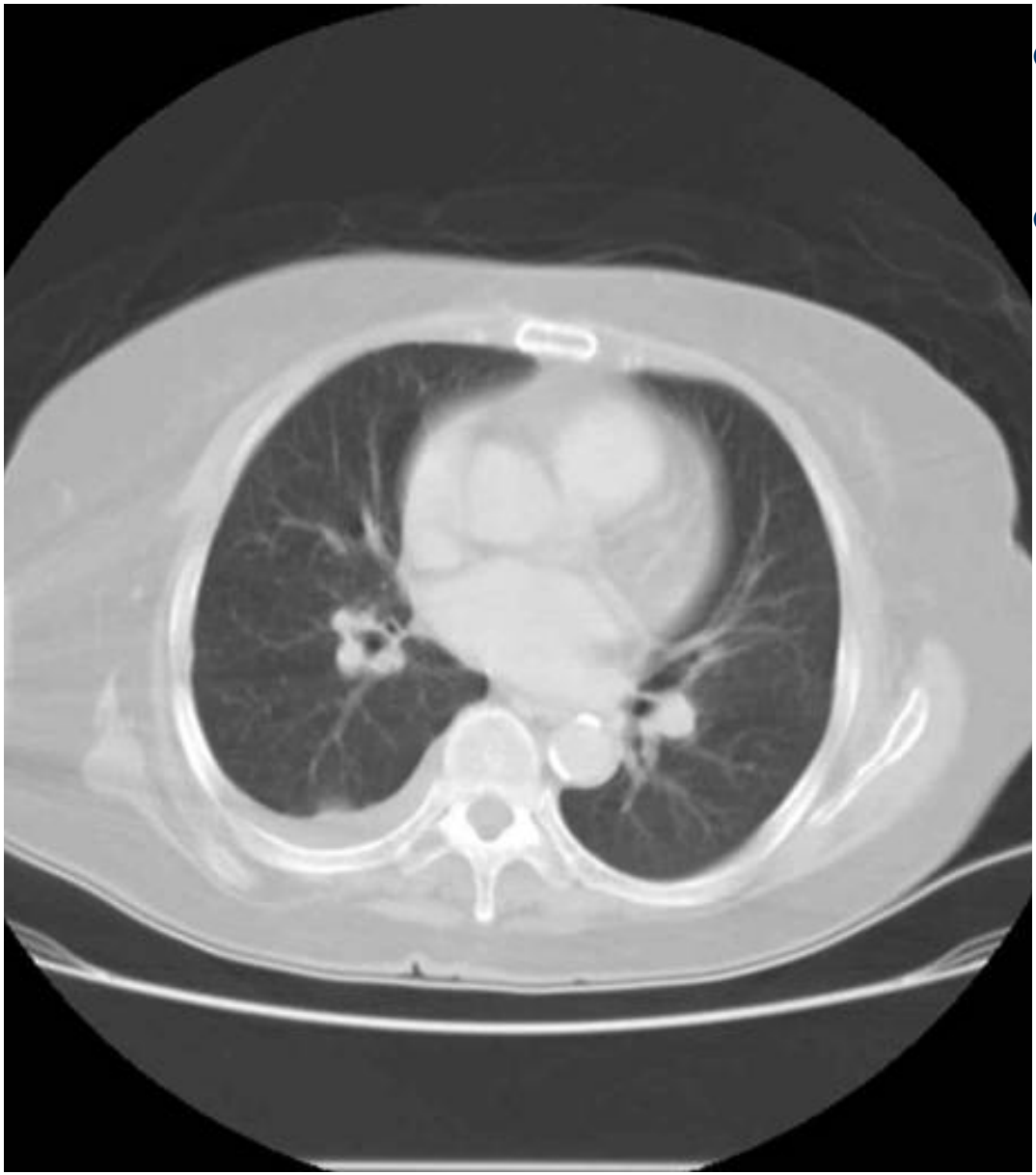
Image

- Well defined hyper dense area with alveolar process over RUL
- Engorged bil. Pulmonary vessel
- Right pleural effusion
- s/p ORIF of right humerus

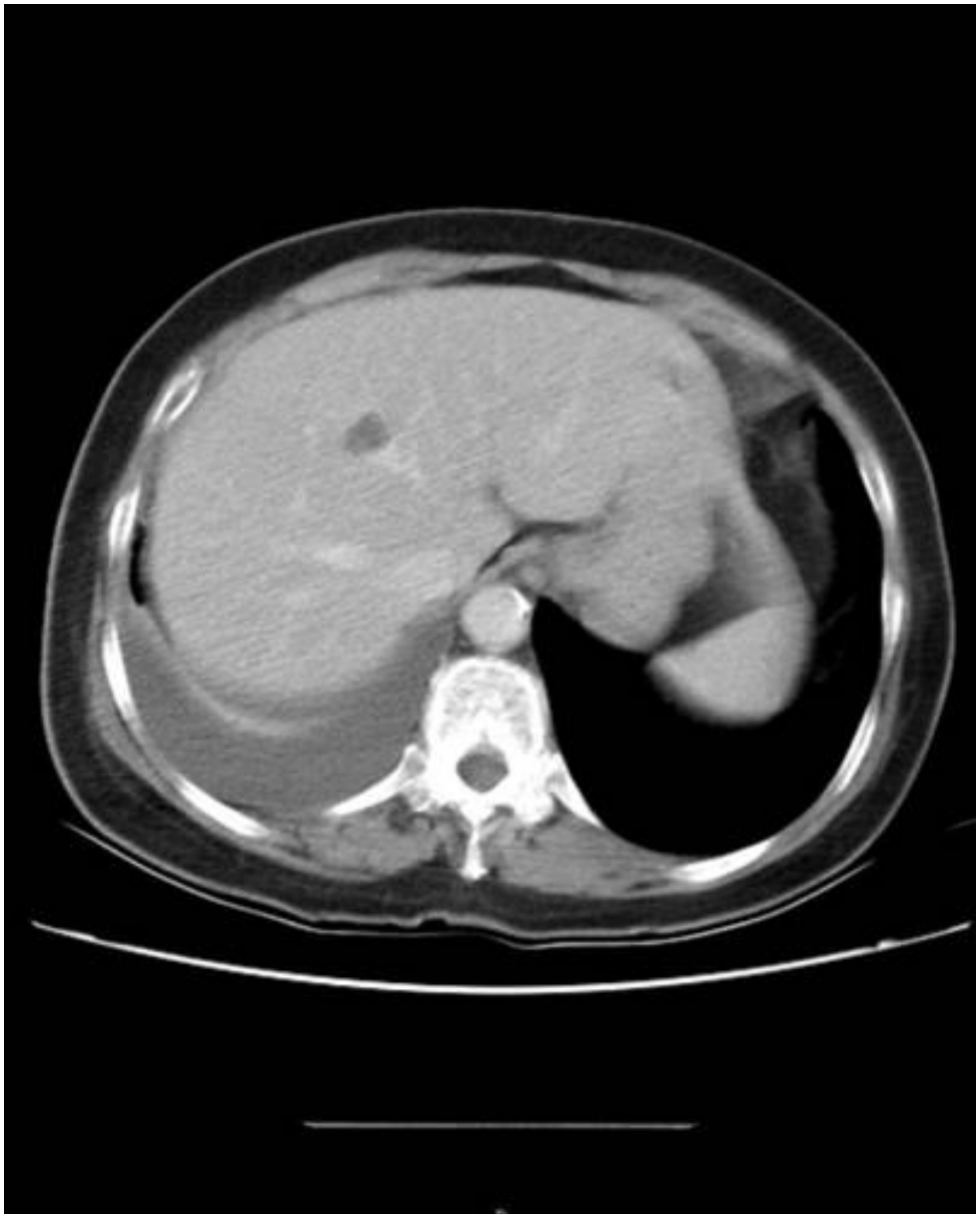


- Retro sterum lung density

- Spiculated, heterogenous, hyperdense mass over RUL, 4.5cm in diameter, with contrast enhancement, no cavitation or calcifacation.
- Metastatic boney lesion at left scapula

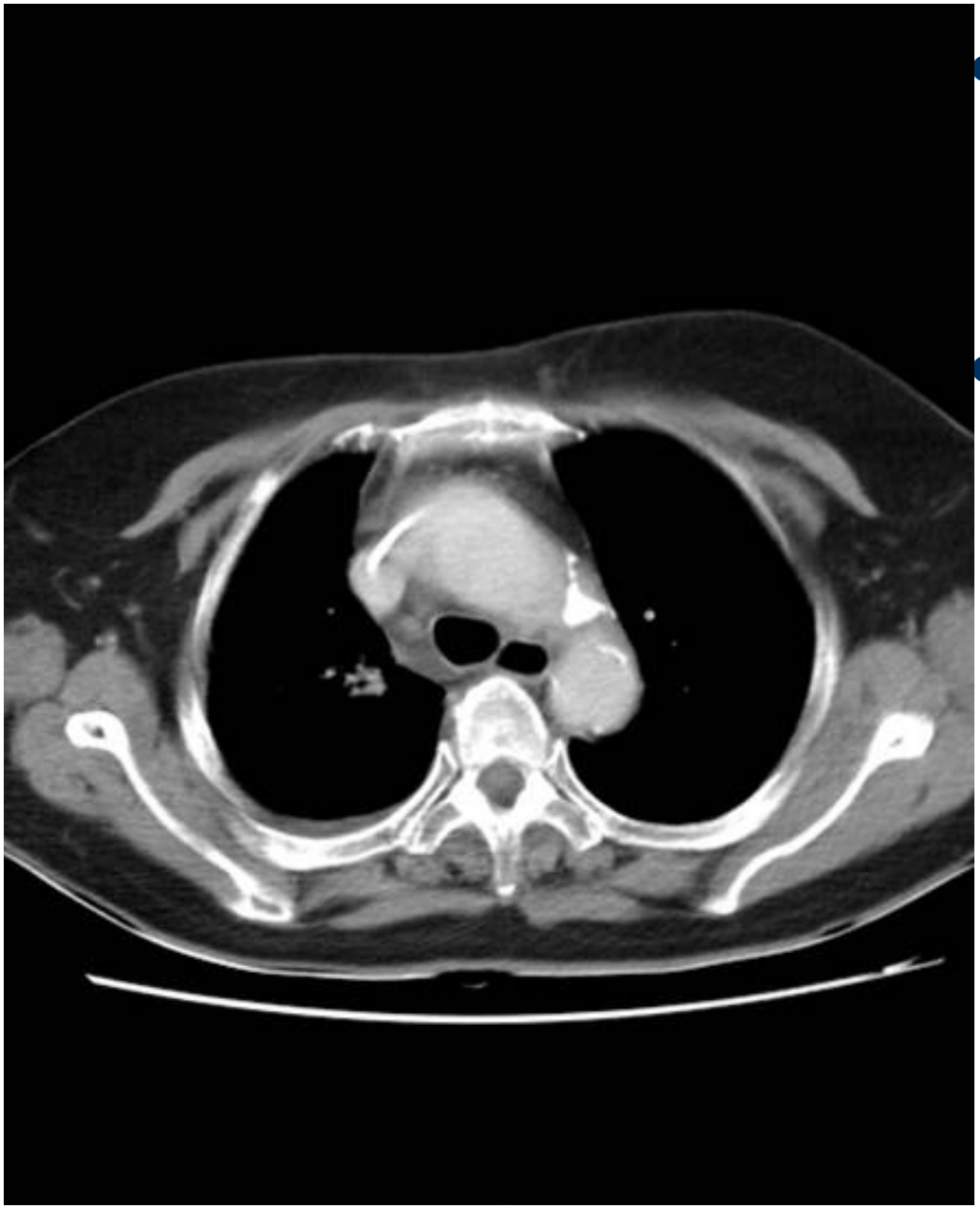


- Perihilar lymph node enlargement
- Right side pleural effusion



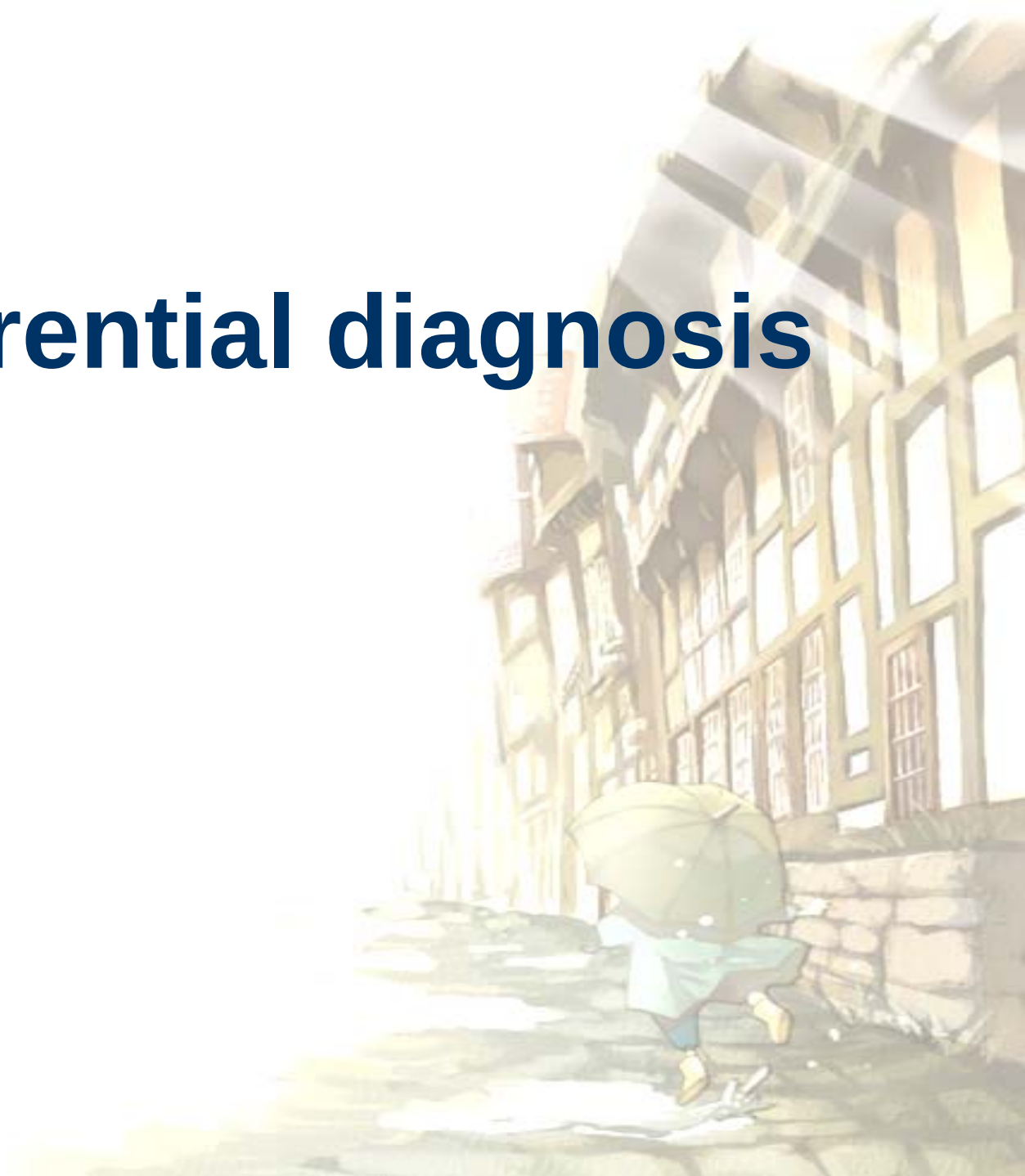
- Hypodense area at S8, well defined
- Right pleural effusion

- Gall bladder stone



- Right paratracheal lymphnode enlargement with calcification noted
- Port-A in position

Differential diagnosis

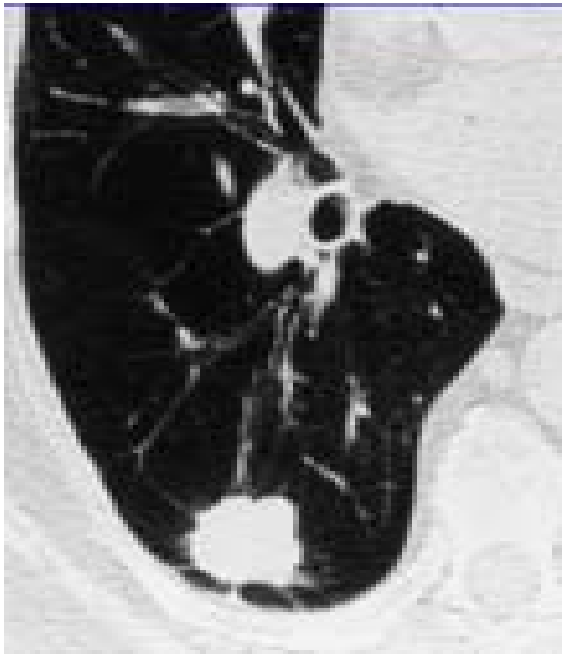


Morphologic Evaluation - Size

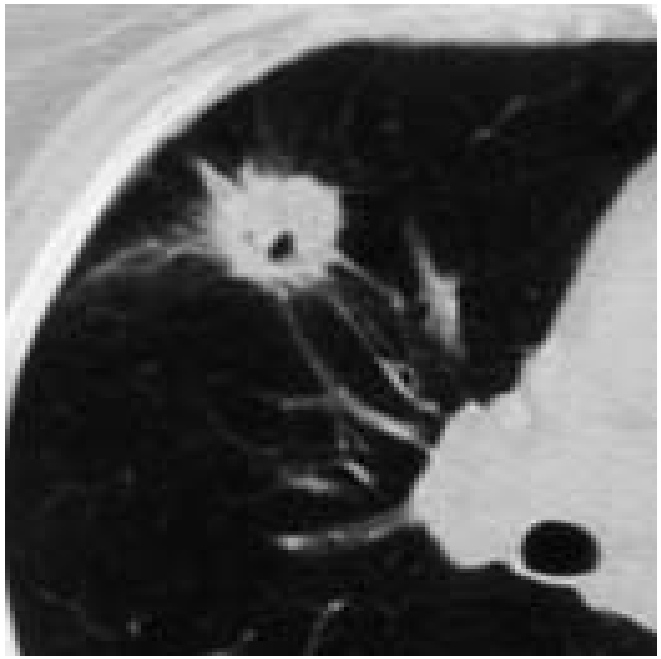
- the smaller the nodule, the more likely it is to be benign
- 80% of benign nodules are less than 2cm
- 15% of malignant nodules are less than 1cm in diameter
- 42% of malignant nodules are less than 2cm in diameter

Morphologic Evaluation – Margins and Contours

- smooth, lobulated, irregular, or spiculated
- most smooth, well-defined margins are benign
- 21% of malignant nodules have well-defined margins
- lobulated contour implies uneven growth
- irregular or spiculated margin with distortion of adjacent vessels (sunburst or corona radiata)



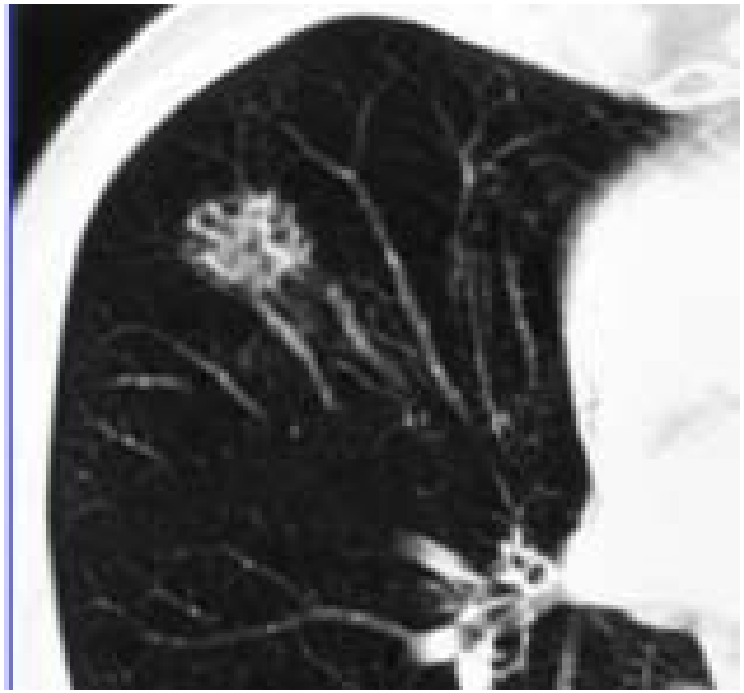
- a lobulated and spiculated nodule
- NSCLC



- a spiculated nodule with eccentric cavitation
- NSCLC

Morphologic Evaluation - Internal characteristic

- Homogeneous attenuation is seen at thin-section CT in both benign (55%) and malignant (20%) nodules
- Pseudocavitation and air bronchograms within a nodule are suggestive of bronchioloalveolar cell carcinoma and lymphoma, respectively

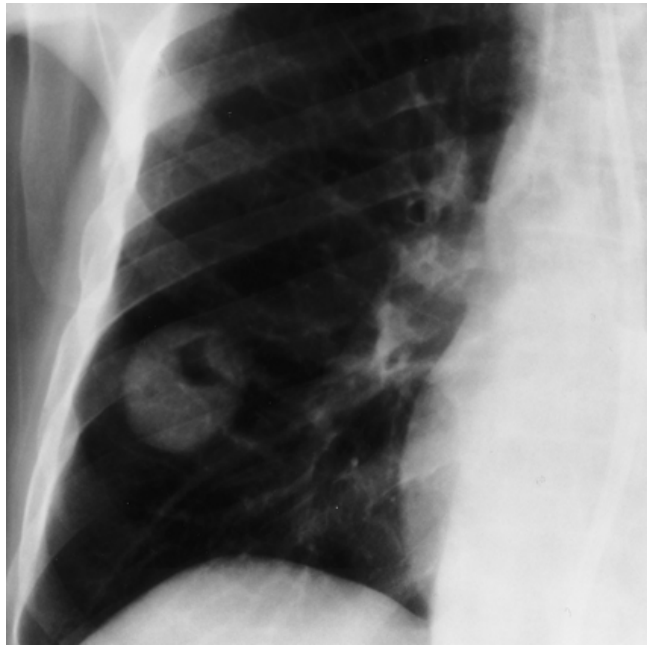


- a poorly marginated nodule in the mid-lung.
- Small focal areas of low attenuation in the nodule (pseudocavitation) are suggestive of bronchioloalveolar cell carcinoma

Morphologic Evaluation - Cavitation

- occurs in both benign and malignant nodules
- Benign: smooth, thin walls
- Malignant: thick, irregular walls
- wall thickness > 16 mm are malignant
- wall thickness < 4 mm are usually benign

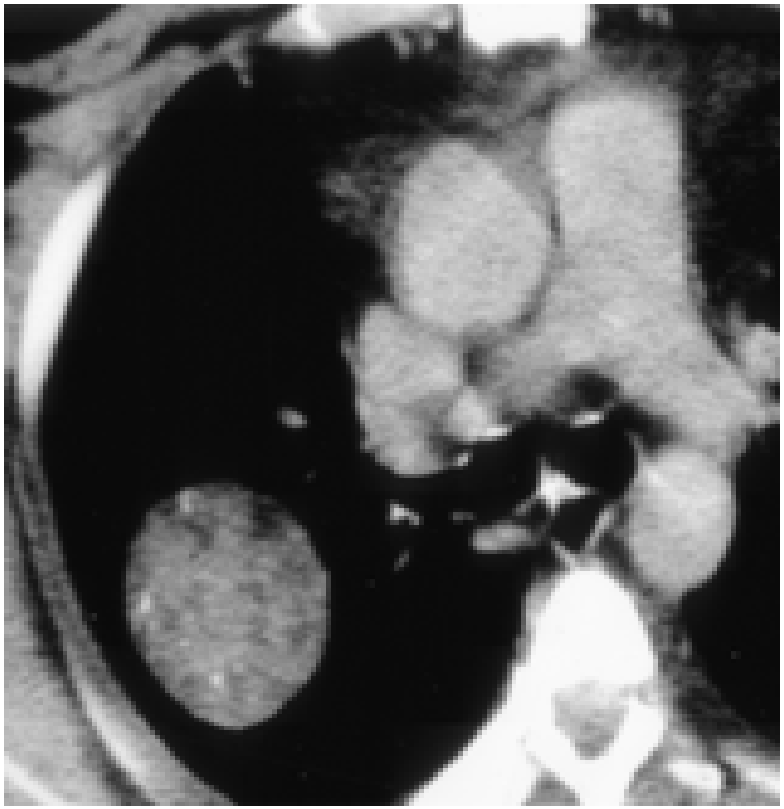
- a thin-walled cavitary nodule
- *Aspergillus* infection



- smoothly marginated nodule in the lower lobe.
- eccentric cavitation and thick walls
- SCC

Morphologic Evaluation – Fat and Calcification

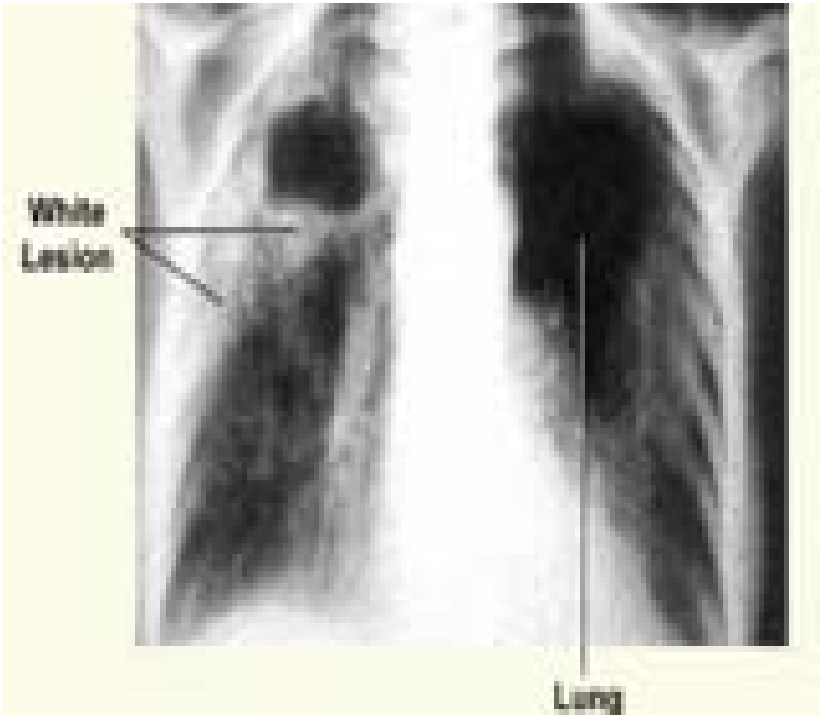
- intranodular fat (attenuation, -40 to -120 HU): reliable indicator of a hamartoma
- benign patterns of calcification: central, diffuse solid, laminated, and "popcornlike."



- heterogeneous, sharply marginated lesion with small focal areas of calcification and fat
- typical features of hamartoma

Tuberculosis

- Primary TB: small nodule, middle or upper lung field, hilar lymph node or mediastinal lymph node
- Post primary TB: upper lobe apical segment and posterior segment, lower lobe apical segment, cavitation, tuberculous bronchopneumonia, calcification



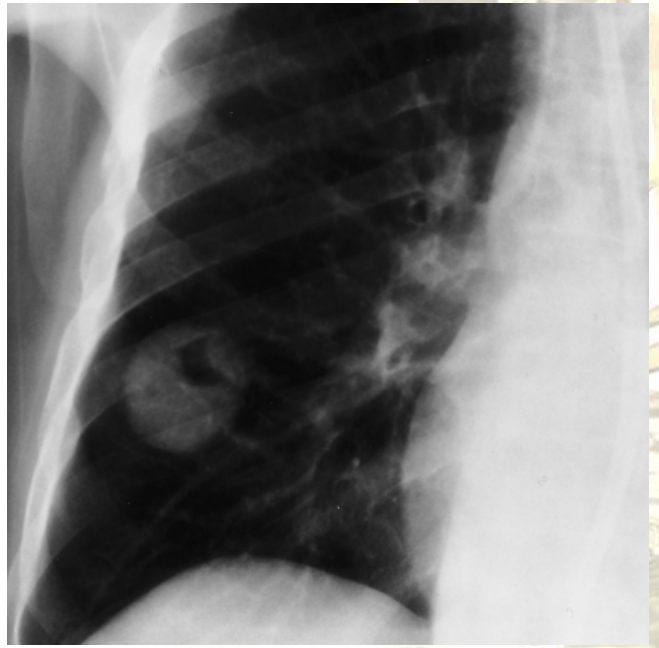
- Heterogenous density at apical segment of RLL, fibrosis noted

Squamous cell carcinoma

- 30% of all lung cancers
- more often centrally located within the lung
- larger than 4 cm in diameter
- Cavitation is seen in up to 82%
- commonly cause segmental or lobar lung collapse due to central location and relative frequency

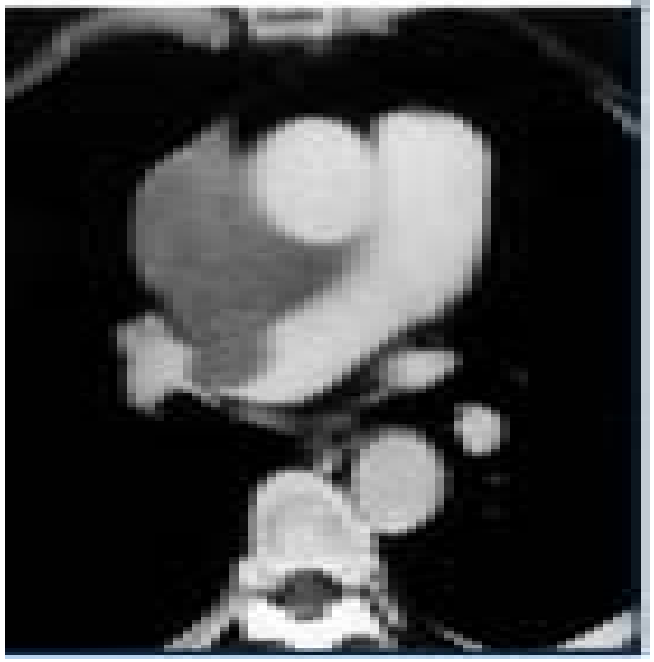
- Golden’s S sign
- RUL atlectasis due to the central located tumor

- Cavitation with thick wall



Small cell lung cancer

- 18% of all lung cancers
- bulky hila and mediastinal lymph node masses
- A noncontiguous parenchymal mass can be identified in up to 41% at CT that very rarely cavitates
- A mass in or adjacent to the hilum is characteristic of SCLC and the tumour may well show mediastinal invasion

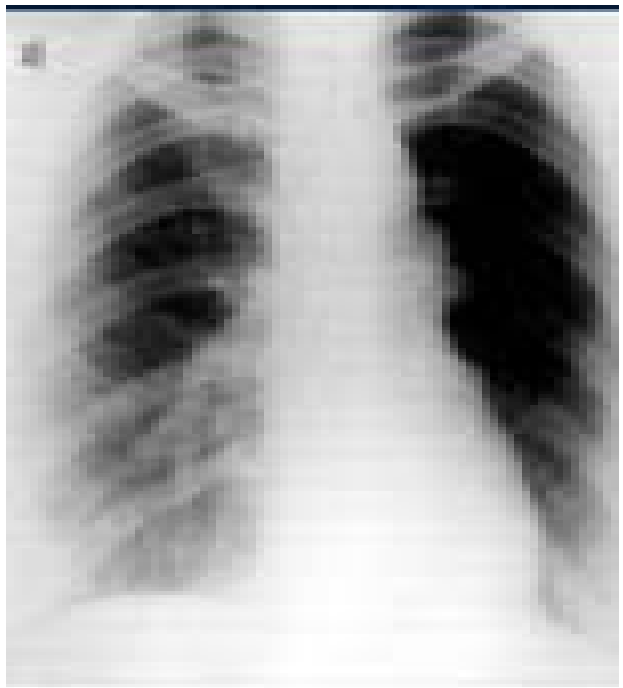


- widened mediastinum particularly on the right with reduced vascularity of the right lung

- central mediastinal mass invading the right pulmonary artery.

Carcinoid tumor

- 1% of all lung cancers
- Atypical carcinoid tumours tend to be larger (typically >2.5 cm at CT) with typical carcinoid tumours
- endobronchial growth, obstructive pneumonia and centrally
- calcification is seen in 26–33%
- The 5-yr survival for typical carcinoids is 95% against 57–66% for atypical carcinoids



- Inspiratory film with asymmetrical vascularity

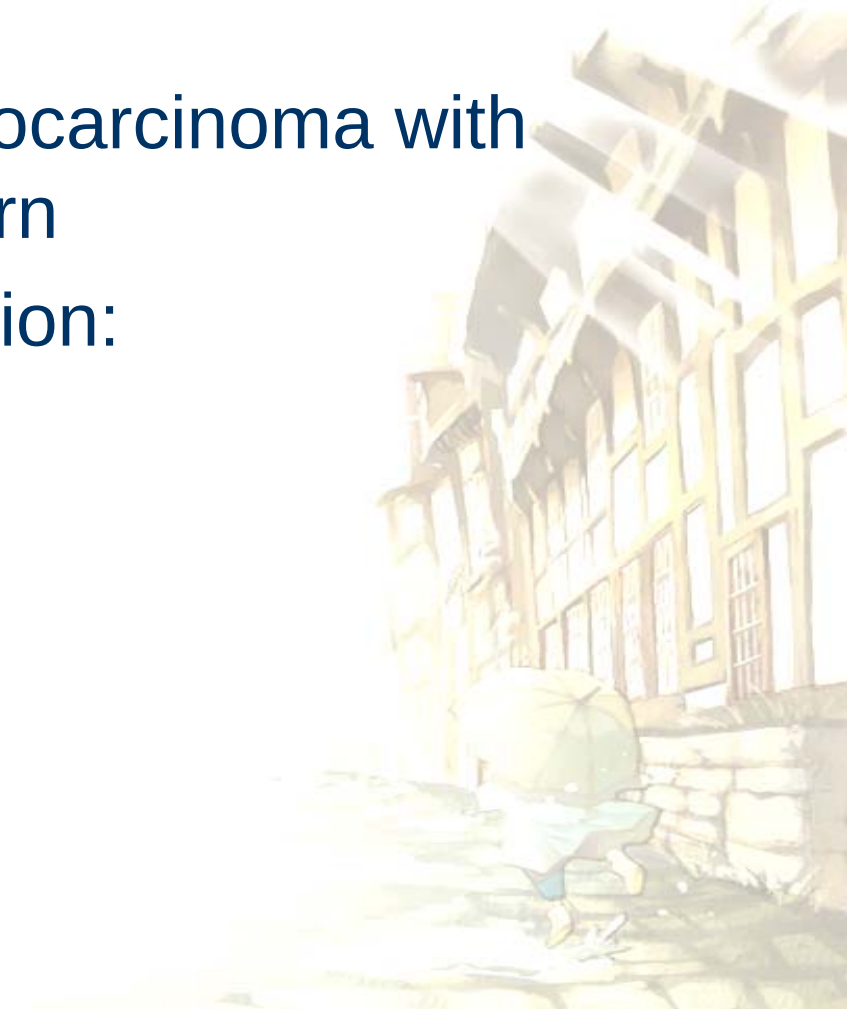
- Expiratory film confirming air trapping due to carcinoid tumour in the left main bronchus.

Treatment

- Palliative R/T
- C/T with Aradia, NNNC x 6, Nalvebinex

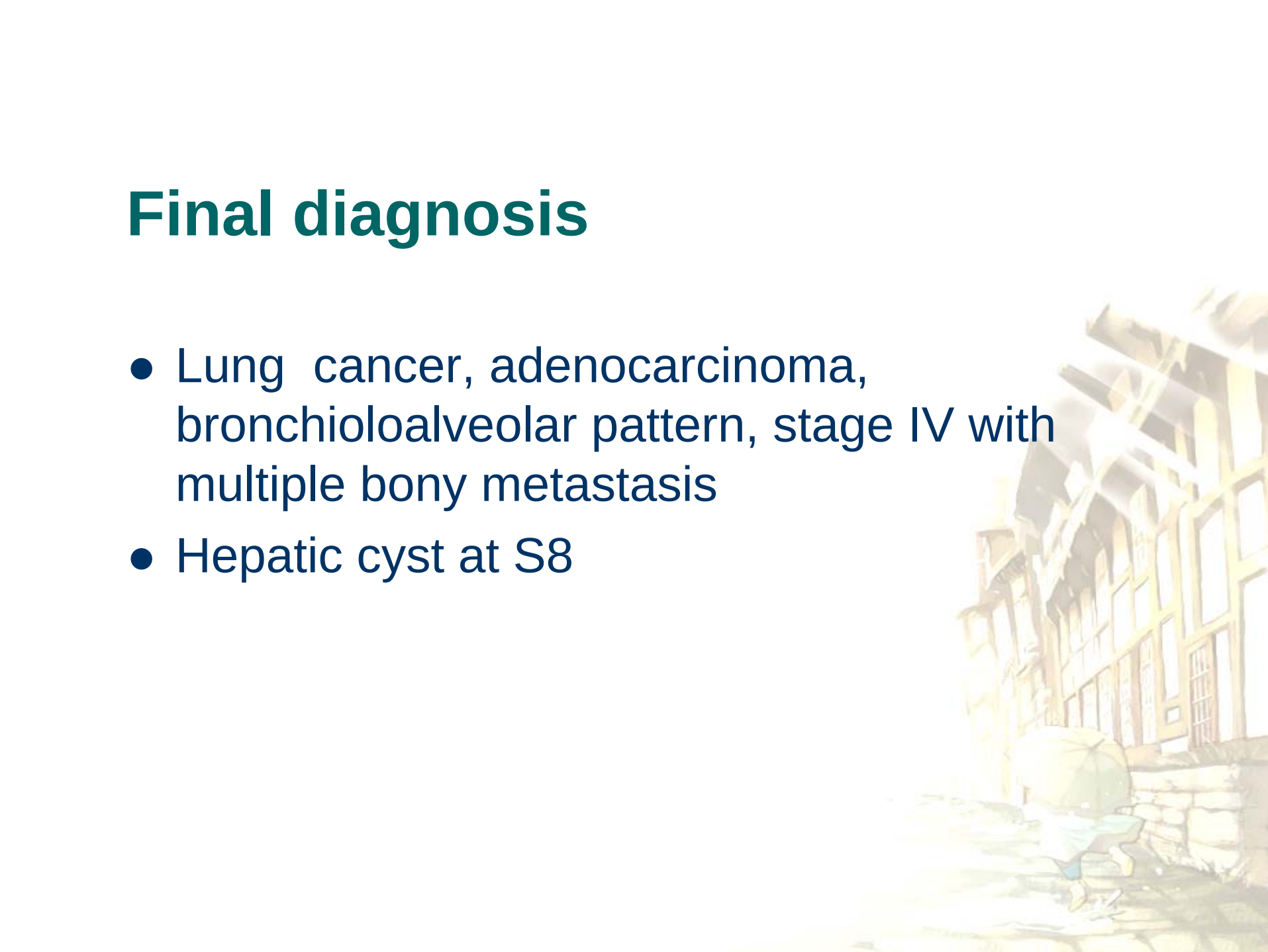
Pathology

- CT guided biopsy: adenocarcinoma with bronchioloalveolar pattern
- Cytology of pleural effusion: Adenocarcinoma



Final diagnosis

- Lung cancer, adenocarcinoma, bronchioloalveolar pattern, stage IV with multiple bony metastasis
- Hepatic cyst at S8



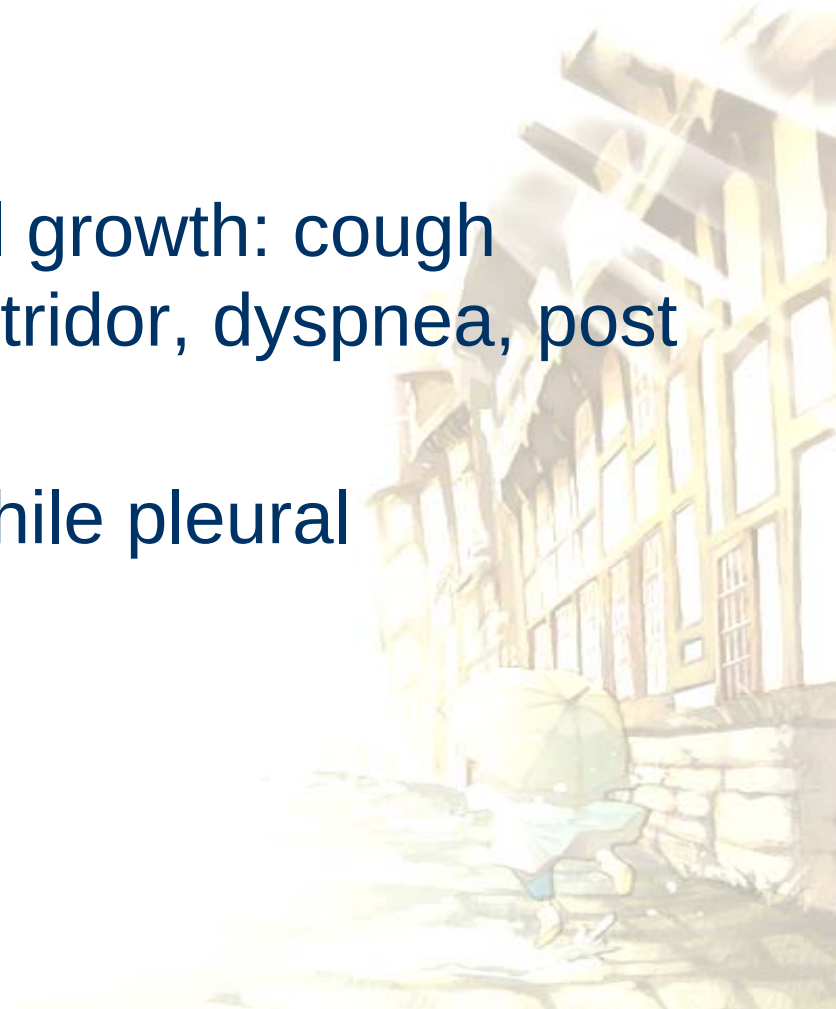
Discussion

Clinical Manifestation

- Local tumor growth
- Invasion or obstruction of adjacent tissue
- Growth in regional lymph node
- Growth in distant metastatic site
- Para-neoplastic syndrome

Mass effect - 1

- 5-15% asymptomatic
- Central or endobronchial growth: cough hemoptysis, wheezing, stridor, dyspnea, post obstructive pneumonitis
- Periphral growth: pain while pleural involvement

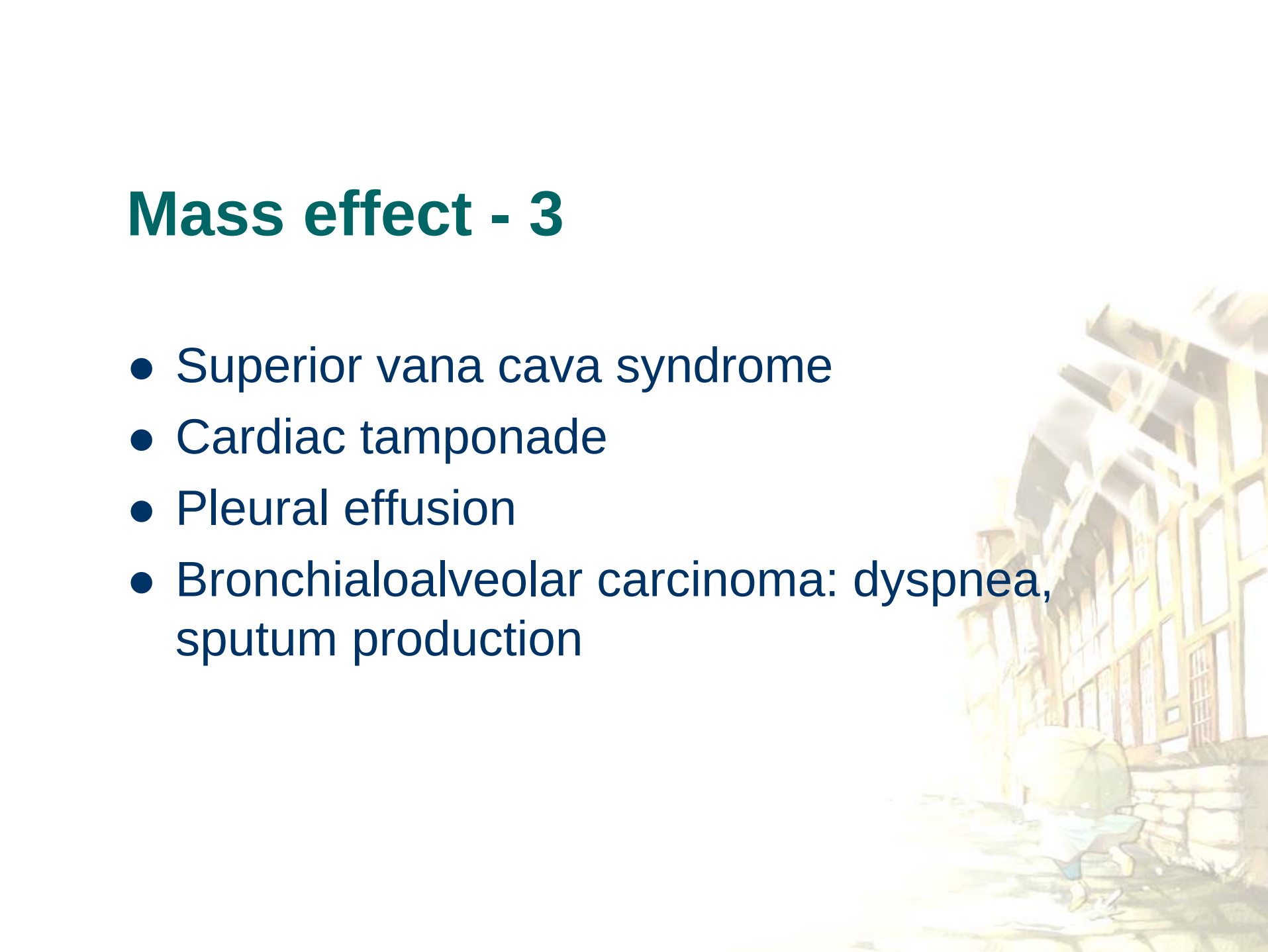


Mass effect - 2

- Recurrent laryngeal nerve paralysis with hoarseness
- Phrenic nerve paralysis with elevation of the hemidiaphragm and dyspnea
- Sympathetic nerve paralysis with Horner’s syndrome
- 8th cervical nerve, 1st and 2nd thoracic nerve paralysis with Pancoast’s syndrome

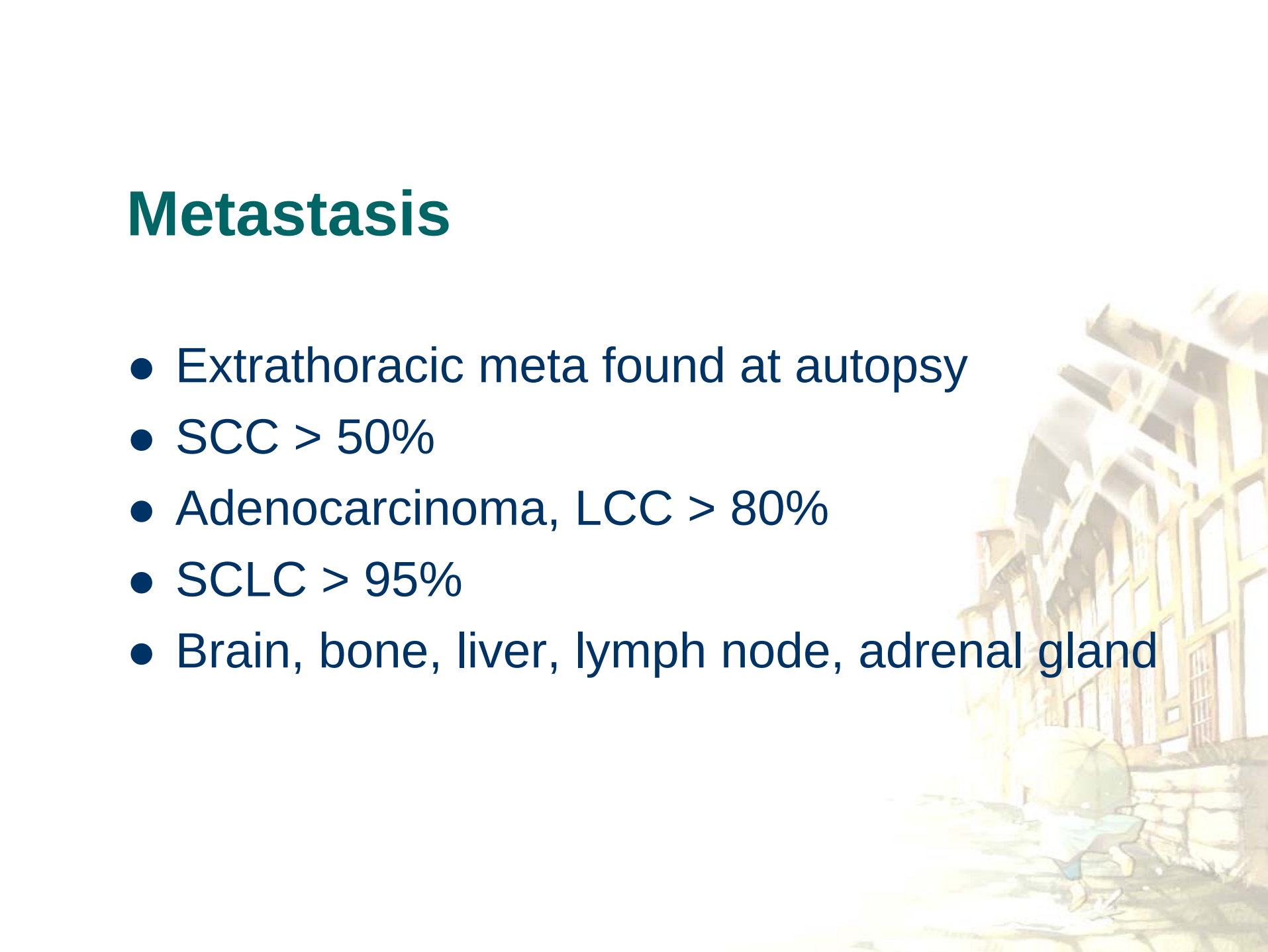
Mass effect - 3

- Superior vana cava syndrome
- Cardiac tamponade
- Pleural effusion
- Bronchialoalveolar carcinoma: dyspnea, sputum production



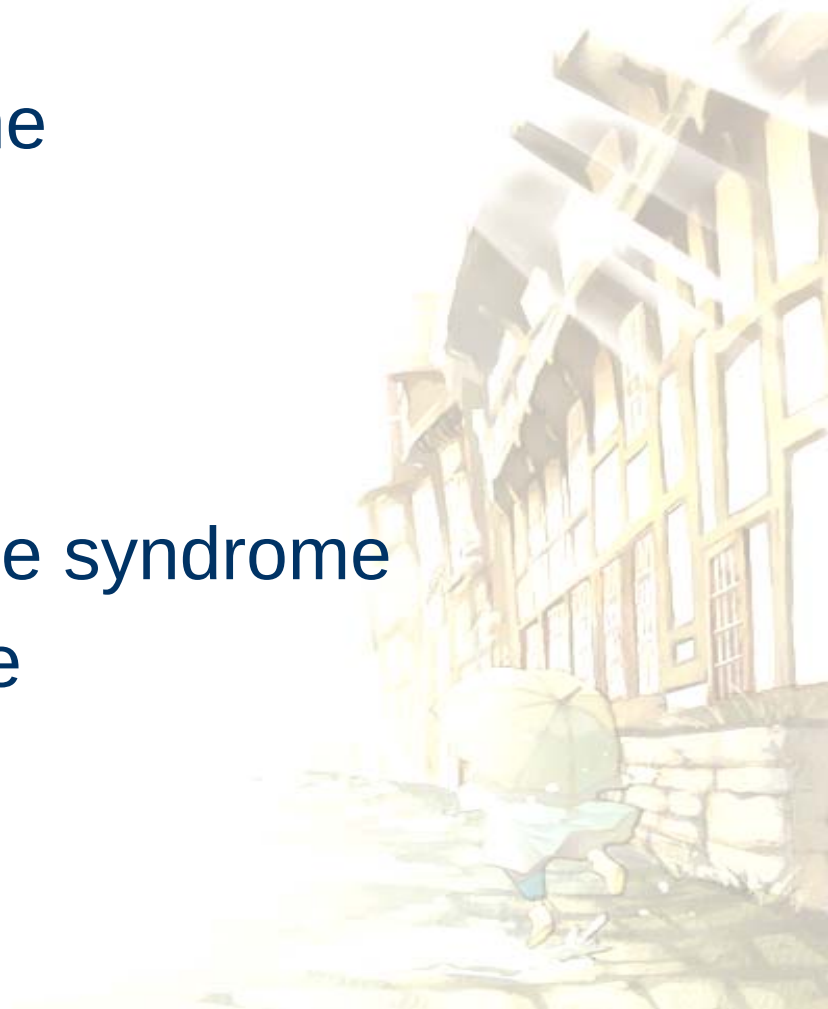
Metastasis

- Extrathoracic meta found at autopsy
- SCC > 50%
- Adenocarcinoma, LCC > 80%
- SCLC > 95%
- Brain, bone, liver, lymph node, adrenal gland



Tissue secretion substance

- Para-neoplastic syndrome
- Hyperparathyroidism
- SIADH
- ACTH
- Skeletal-connective tissue syndrome
- Eaton-Lambert syndrome



Typical Image of Adenocarcinoma

- Represents 31% of all lung cancers, including bronchoalveolar carcinoma
- typically peripherally located
- measure <4 cm in diameter
- only 4% show cavitation
- 51% Hila or hila and mediastinal involvement

Typical Image of Adenocarcinoma

- 2 characteristic appearances on CT:
- Localized ground glass opacity which grows slowly (doubling time >1 yr)
- Solid mass which grows more rapidly (doubling time <1 yr)

Typical image of Bronchoalveolar carcinoma

- a subtype of adenocarcinoma and represents 2–10% of all primary lung cancers.
- 3 characteristic presentations:
- In 41% a single pulmonary nodule or mass
- In 36% multicentric or diffuse disease
- In 22% a localized area of parenchymal consolidation

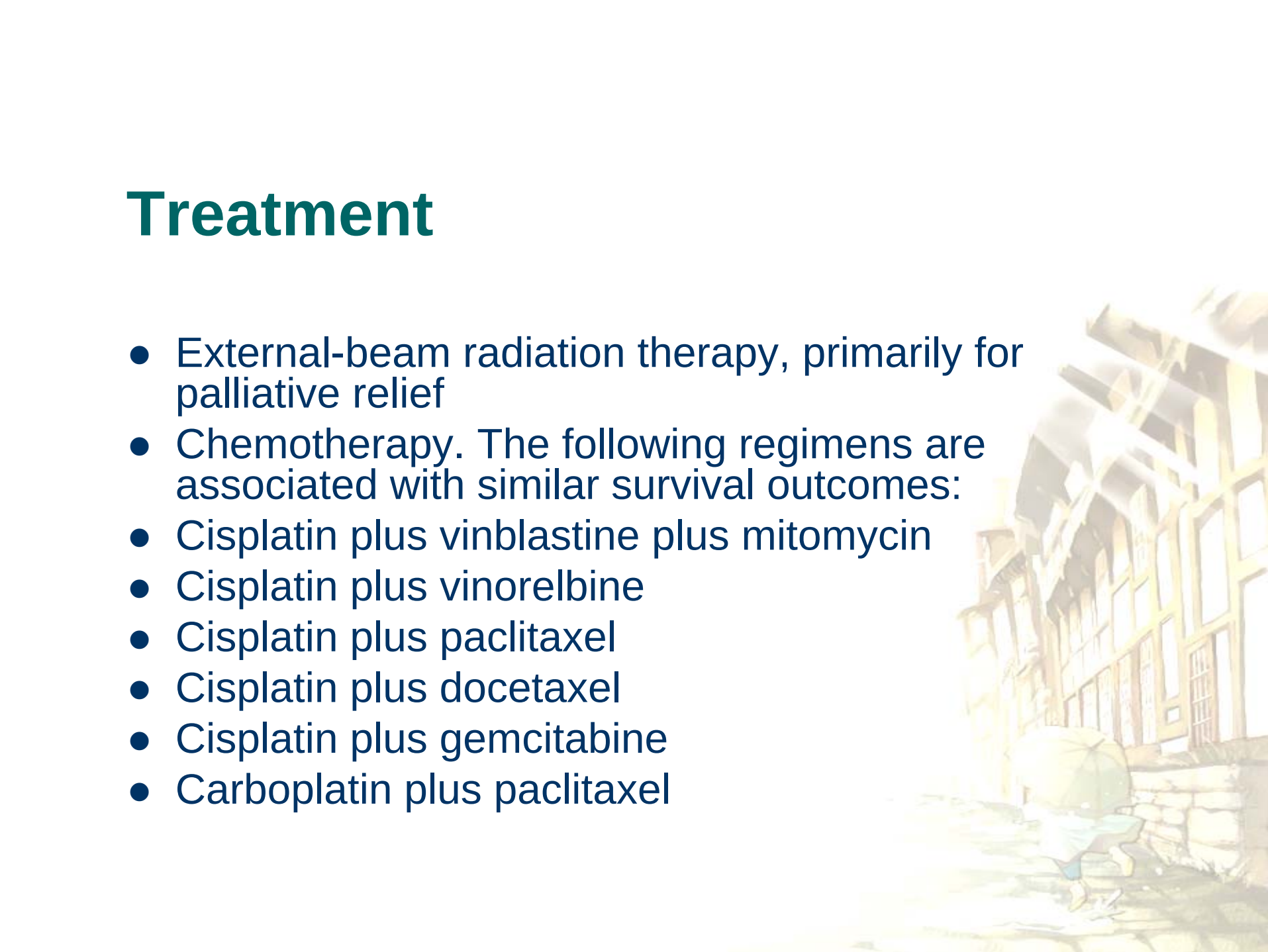
Typical image of Bronchoalveolar carcinoma

- Bubble-like areas of low attenuation within the mass are a characteristic finding on CT
- Hilar and mediastinal lymphadenopathy is uncommon
- Persistent peripheral consolidation with associated nodules in the same lobe or in other lobes should raise the possibility of bronchoalveolar carcinoma

- a) Diffuse alveolar shadowing in the right lower lobe of a 58-yr-old male presenting as an unresolving pneumonia.
- b) Air bronchograms and low attenuation lucencies in apical "consolidation", later confirmed as bronchoalveolar carcinoma.

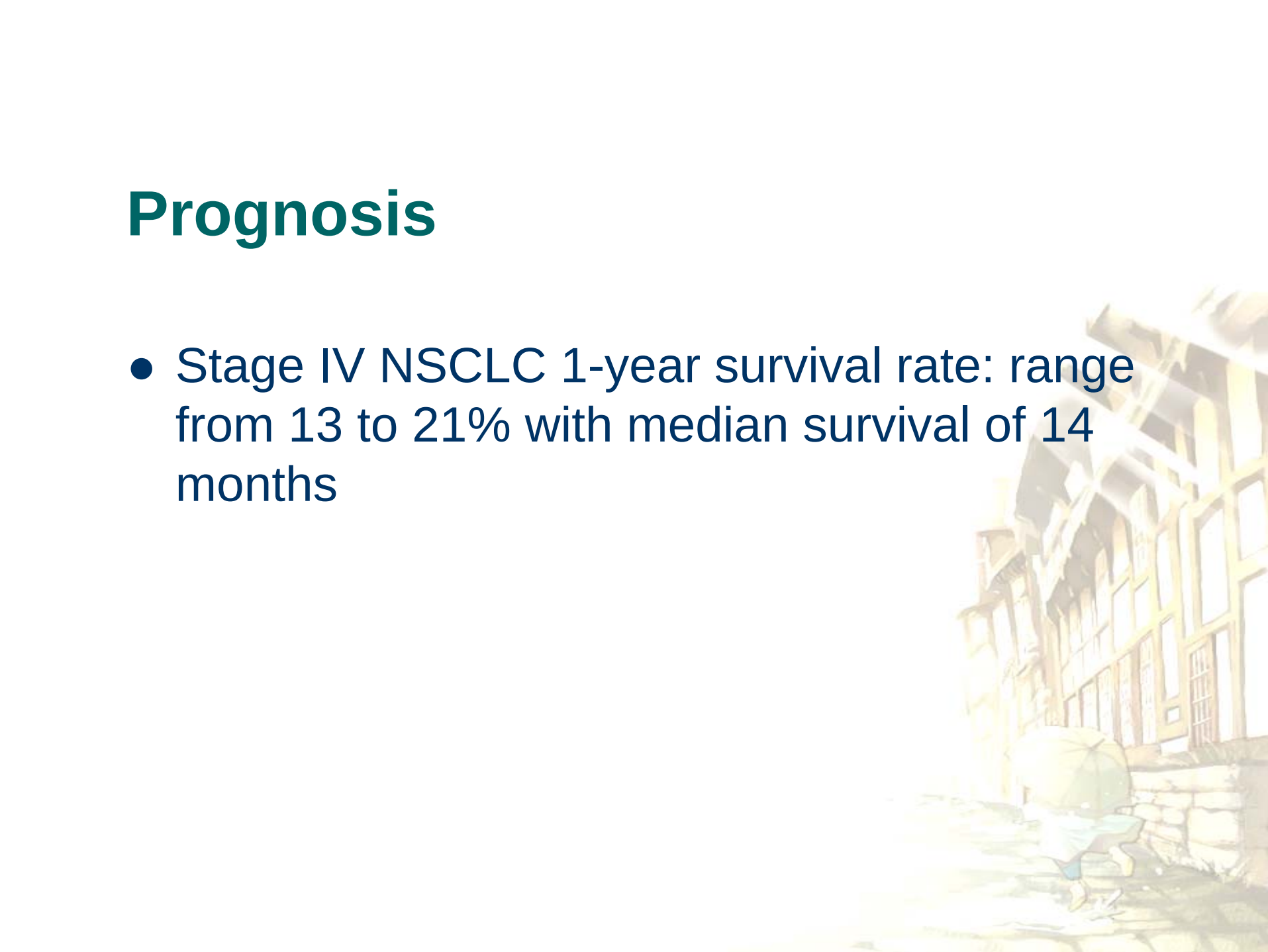
Treatment

- External-beam radiation therapy, primarily for palliative relief
- Chemotherapy. The following regimens are associated with similar survival outcomes:
- Cisplatin plus vinblastine plus mitomycin
- Cisplatin plus vinorelbine
- Cisplatin plus paclitaxel
- Cisplatin plus docetaxel
- Cisplatin plus gemcitabine
- Carboplatin plus paclitaxel



Prognosis

- Stage IV NSCLC 1-year survival rate: range from 13 to 21% with median survival of 14 months



	Months after Treatment (Cumulative Percent Surviving)				
	12 (%)	24 (%)	36 (%)	48 (%)	60 (%)
cStage†					
cIA (n5687)	91	79	71	67	61
cIB (n51,189)	72	54	46	41	38
cIIA (n529)	79	49	38	34	34
cIIB (n5357)	59	41	33	26	24
cIIIA (n5511)	50	25	18	14	13
cIIIB (1,030)	34	13	7	6	5
cIV (n51, 427)	19	6	2	2	1
pStage‡					
pIA (n5511)	94	86	80	73	67
pIB (n5549)	87	76	67	62	57
pIIA (n576)	89	70	66	61	55
pIIB (n5375)	73	56	46	42	39
pIIIA (n5399)	64	40	32	26	23

Thanks for your attention!