Patient's Data

- Name: 謝洪○○
- 61 y/o, female
- Admission: 94-11-28 ~ 94-12-08

Chief Complaint

- Dyspnea and chest tightness on exertion sometimes for 1 year

Present Illness

- 61 y/o female
- Easily felt dyspnea and chest tightness on exertion sometimes in resent 1-2 years
- A mass located at anterior-superior mediastinum was noted at a health exam 1 year ago at 署立桃園醫院

- CT scan at 高雄長庚 revealed a tumor over anterior mediastinum (anterior to aorta, but not invading to lumen)
- Biopsy: thymic carcinoma
- Surgical intervention was suggested, but patient's family refused
- Transferred to Dr. 邱仲峰

- SRT was performed from 94-03 to 94-06. Completed the whole course
- CT scan f/u in this period: thymic tumor shrinkage from 5.0 x 3.8cm to 3 x 2.4cm
- Consulted Dr. 連允昌 for if any indication of surgical intervention
- Operation was arranged on 94-12-01

Past History

- Hypertension for about 10 years with regular medication and following up
- Smoking (-), Alcohol (-)
- Specific family history (-)

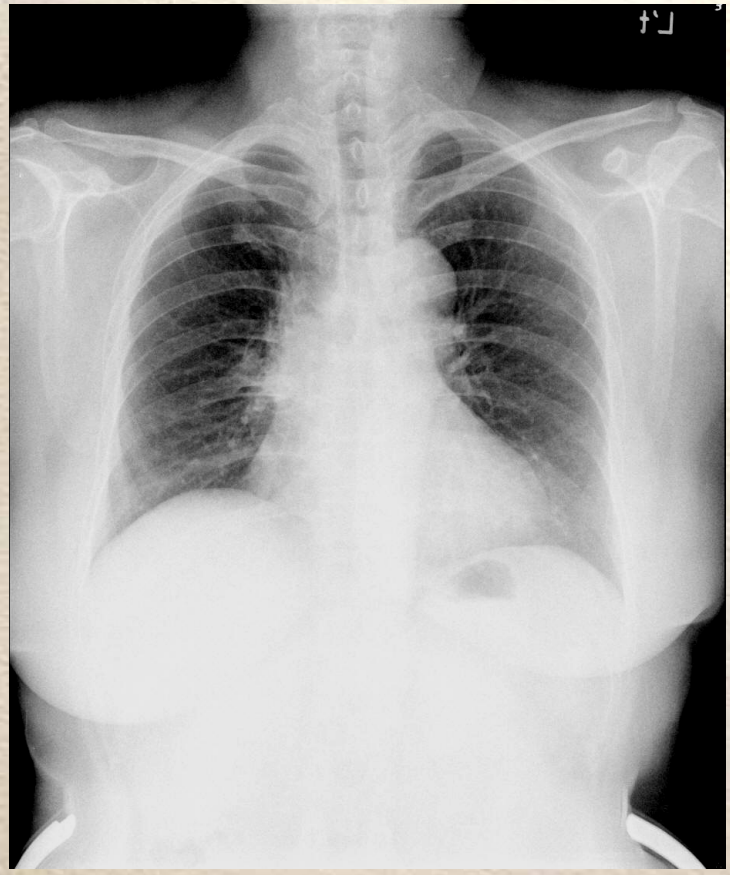
Physical Examination

- Neck:
  - Supple, no palpable mass
  - no enlarged lymph nodes
- Chest:
  - Bilateral clear breathing sounds
  - Symmetric expansion
- Heart:
  - Regular heart beat, no murmur

Laboratory Data

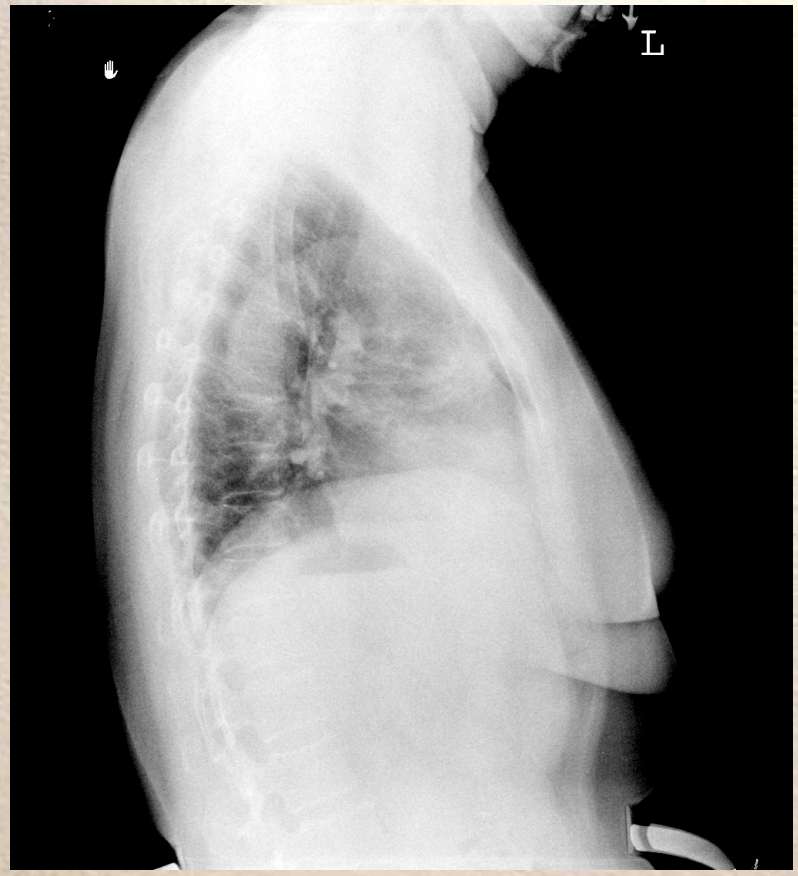
- Albumin 3.4 mg/dl

Images- CXR (PA view)



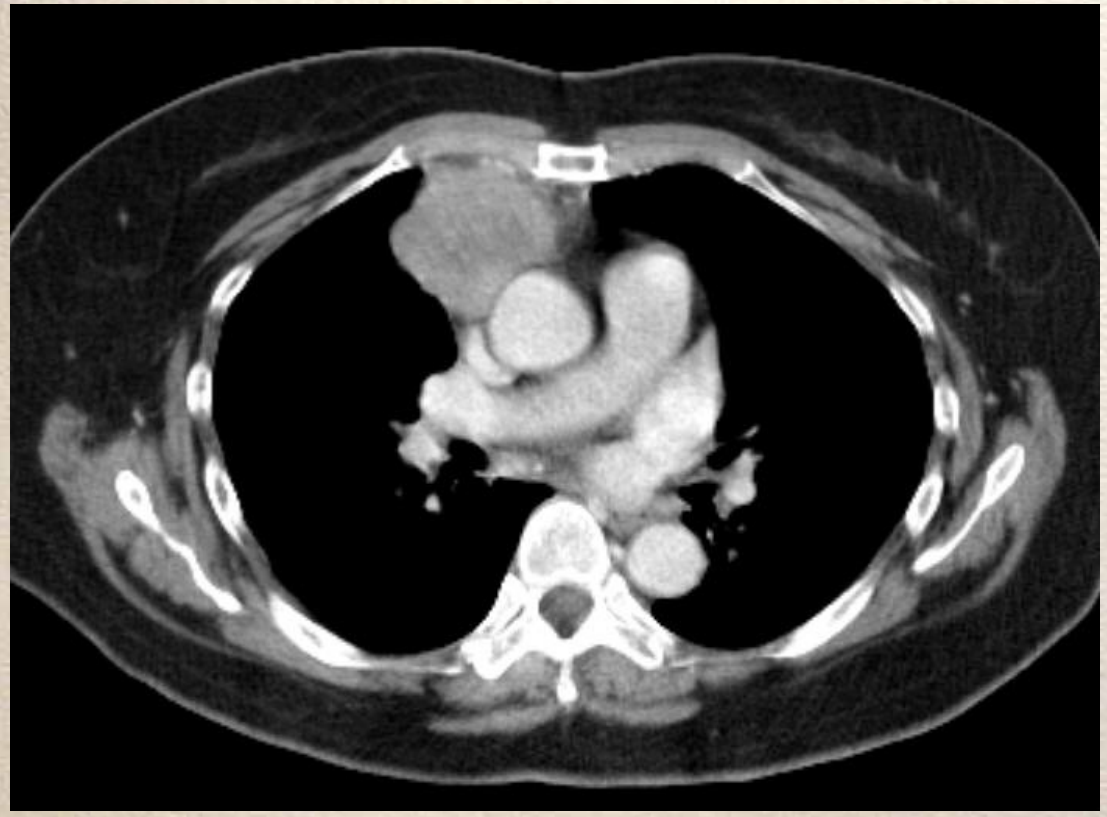
- Radio-opasity mass over right upper aspect of heart
- Widening of mediastinum
- Normal appearance of lung marking

Images- CXR (lateral view)

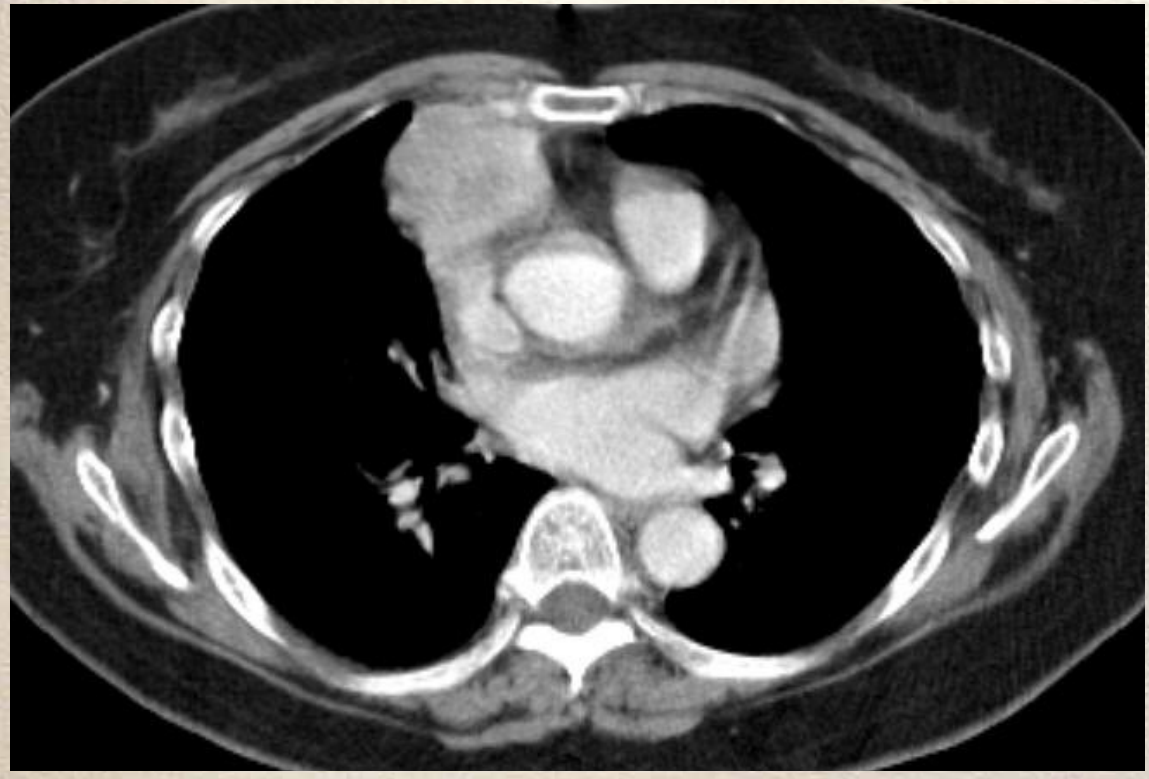


- Radio-opasitic lesion over retro-sternal area
- Located at anterior mediastinum
- Contour of aortic arch revealed clear

Images- chest CT (2005-02)

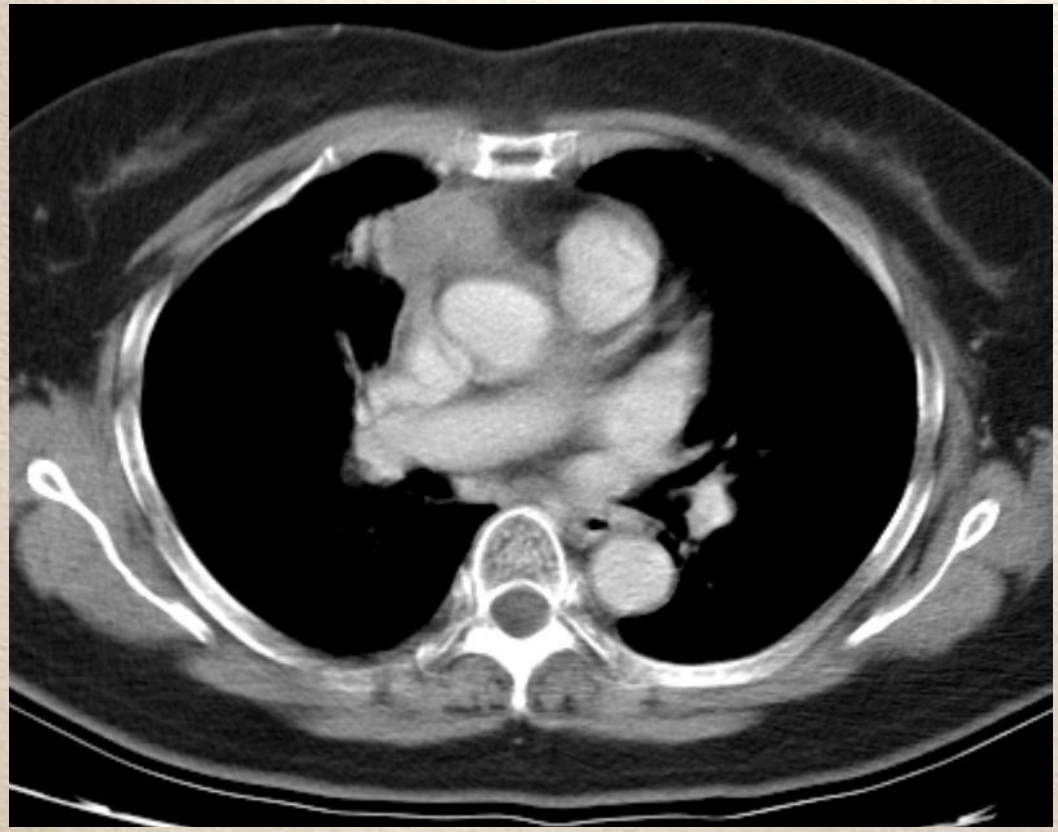


- Heterogenous mass measuring as 5.0 x 3.8 cm in size (central necrotic change of liqufication)
- soft tissue density
- Located at anterior mediastinum
- No calcification



- Irregular shape, invasion
- No enhancement after IV contrast
- No invasion into ascending aorta and SVC
- No other >1cm lymphadenopathy

Images- chest CT (2005-11)



- Size after SRT course: 3.3 x 2.5 cm
- No invasion into aorta and SVC

Differential Diagnosis

- **3T1L**
  - Thyroid mass
  - Thymoma and thymic carcinoma
  - Teratoma (germ cell neoplasm)
  - Lymphoma with Hodgkin's disease
- Ascending aorta aneurysm

- **Thyroid mass**
  - Located from the level of thoracic inlet inferiorly
  - occasionally may descend behind the trachea and present in the middle mediastinum
  - displace or compress the trachea and may calcify
  - CT: heterogeneous mass, enhances with IV contrast

- **Thymoma and thymic carcinoma**
  - Benign thymoma: 70% thymomas are benign, >40 y/o, may found at the base of heart, may be calcified, cystic in 5% cases
  - Malignant thymoma: spreads locally, often into the pleural space
  - 50% of thymoma cases have MG
  - 15% of MG cases have thymoma

- **Teratoma (Germ cell neoplasm)**
  - Often <40 y/o
  - May contain calcifications, fat, and rarely teeth, fat-fluid level
  - When malignant, the mass are often solid and grow rapidly
  - Seminoma and choriocarcinoma should also be considered

- **Lymphoma, Hodgkin's disease**
  - >50% cases have mediastinal adenopathy, >90% have anterior mediastinal mass
  - Multiple lymphadenopathy

Impression

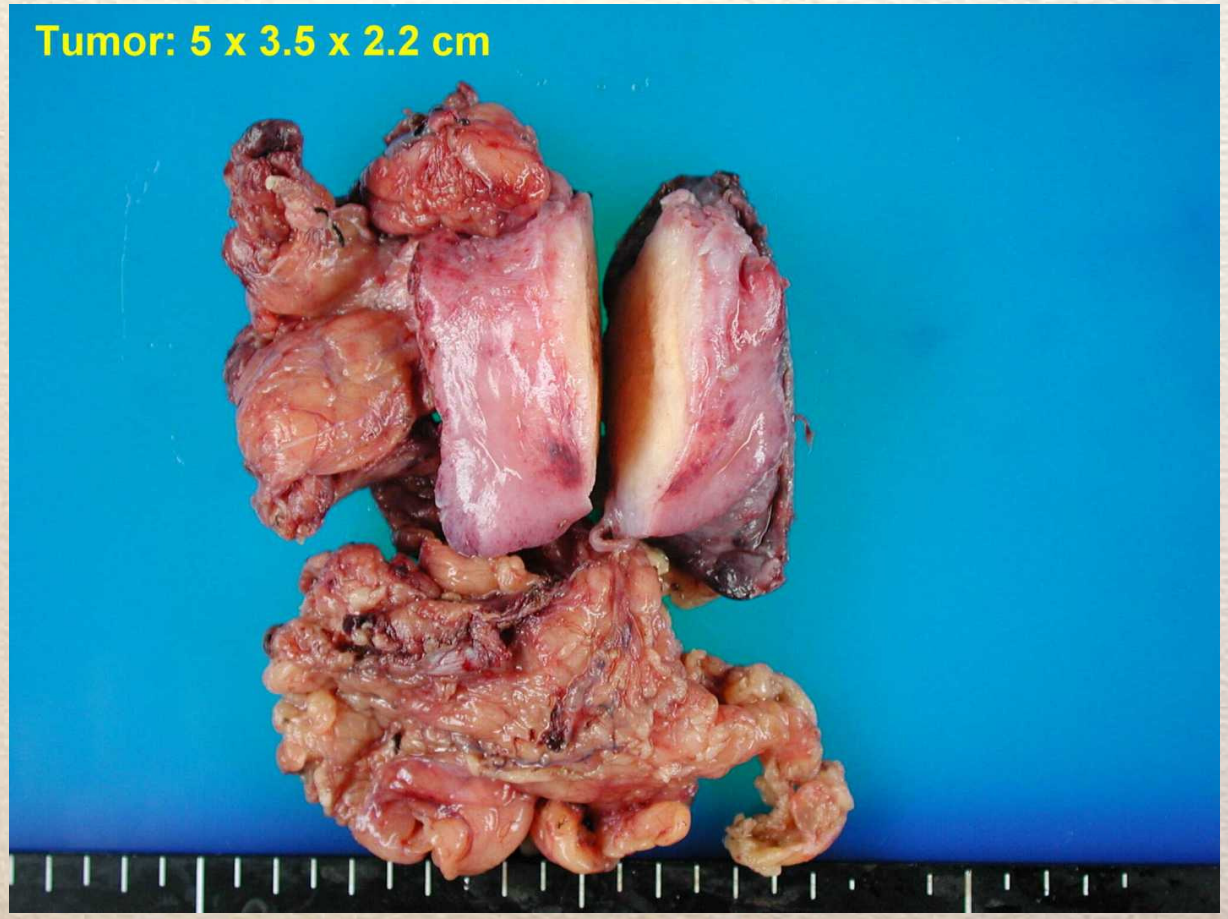
- Invasive thymic tumor
- r/o thymic carcinoma

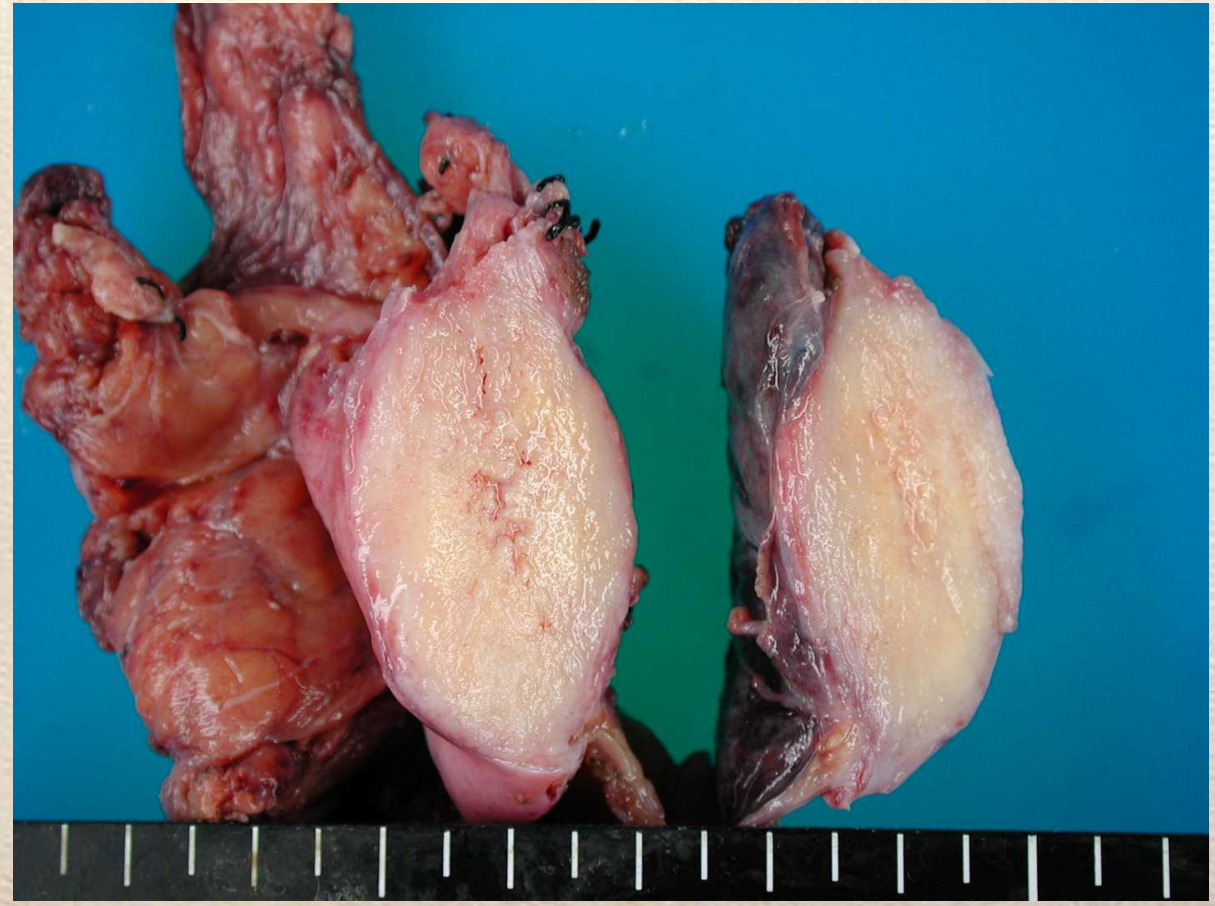
Operation

- Median sternotomy
- Extended thymectomy+removal of thymic carcinoma
- Wedge of RUL
- Pericardiectomy + repair of pericardium

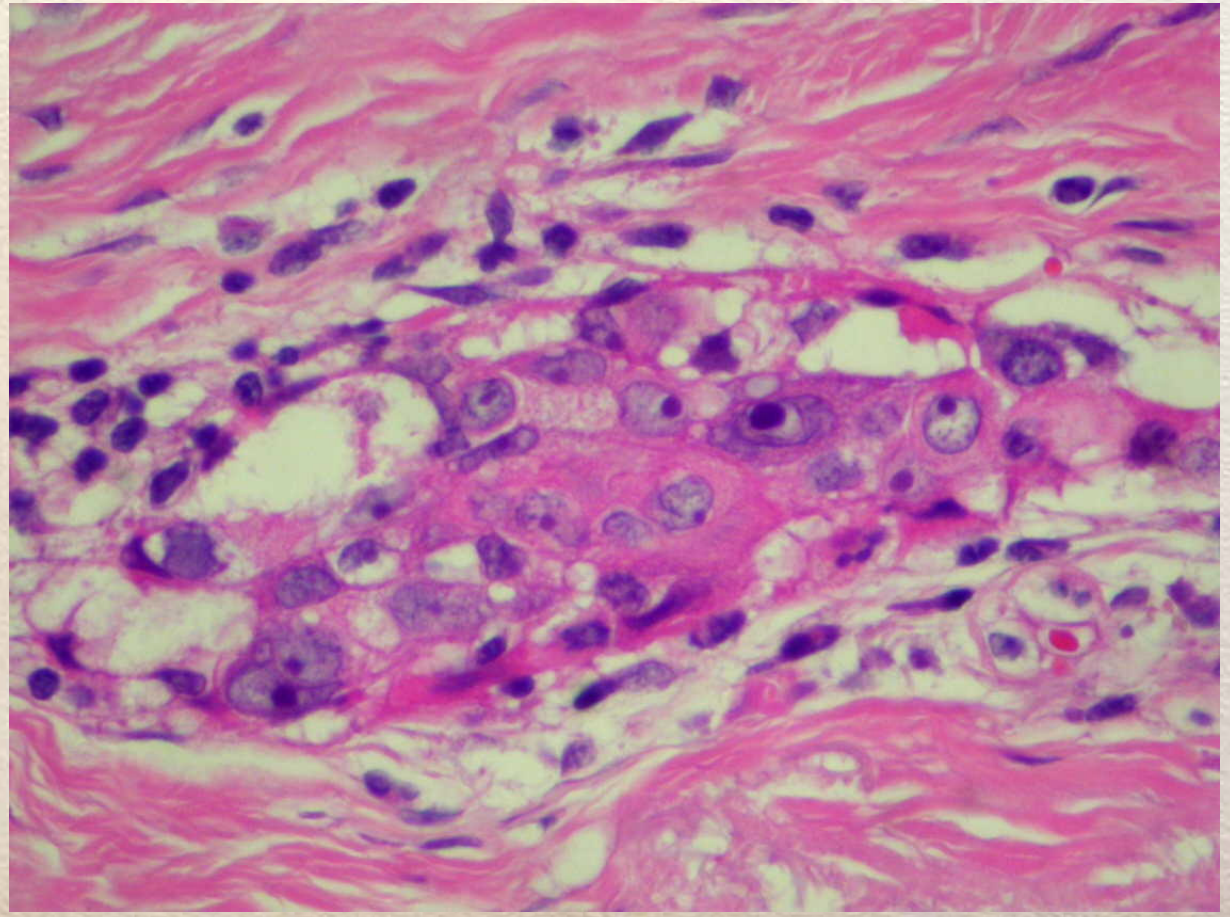
- Operation findings:
  - A 5x3x2 cm tumor over right thymus with severe adhesion with pericardium, RUL, innominate vein and SVC involvement.
  - Total 55 gm thymic carcinoma, thymus, pericardium fat, wedge RUL lung and pericardium was measured

Pathology Report





- **Grossly**
  - Marked central necrosis
  - fibrosis and infiltration to the adjacent right upper lung
  - pericardial soft tissue and pericardium is grossly unremarkable
- **Microscopic**
  - necrotic mass with marked hyaline degeneration in the main thymic tumor
  - epithelail tumor nests with irregular shape or spindle tumor cells infiltrating in the desmoplastic stroma
  - Necrotic tumor infiltrated into right upper lobe of the lung, and soft tissue near the thymus.
  - The pericardial soft tissue and pericardium is not remarkable



Final Diagnosis

- Thymic carcinoma (Type C thymoma)
- Stage III

Discussion

Thymic Carcinoma

- Thymoma: epithelial tumor of thymus
- Thymoma v.s thymic carcinoma:
  - Overt atypia of the epithelial component or not

- **Histologic Description (WHO classification)**
  - Type A Medullary thymoma
  - Type AB Mixed thymoma
  - Type B1 Predominantly cortical thymoma
  - Type B2 Cortical thymoma
  - Type B3 Well-differentiated thymic carcinoma
  - Type C Thymic carcinoma

Clinical Presentation

- Peak incidence: 40-60 years old
- 50% of cases was detected by chance with plain-film chest radiography
- 30% of the patients are asymptomatic
- Coughing, chest pain, and signs of upper airway congestion
- Paraneoplastic autoimmune syndromes
  - myasthenia gravis, polymyositis, lupus erythematosus, rheumatoid arthritis, thyroiditis, and Sjögren's syndrome…

Laboratory Diagnosis

- Clinically based on radiological findings.
- Laboratory studies generally are not indicated

Imaging Diagnosis

- Chest X-ray
  - Silhouette sign
  - Location
- Chest CT
  - diagnosis and clinical staging
  - predicting tumor size, location, and invasion into vessels, the pericardium, and the lung
  - Regular or irregular contour, homogenous or heterogenous, calcification

Treatment

Masaoka Staging System of Thymomas and Corresponding Therapy

Stage	Definition	Treatment
I	Encapsulated tumor with no gross or microscopic invasion	Complete surgical excision
II	Macroscopic invasion into the mediastinal fat or pleura or microscopic invasion into the capsule	Complete surgical excision and postoperative radiotherapy to decrease the incidence of local recurrence
III	Invasion of the pericardium, great vessels, or lung	Complete surgical excision and postoperative radiotherapy to decrease the incidence of local recurrence
IVa	Pleural or pericardial metastatic spread	Surgical debulking, radiotherapy, and chemotherapy
IVb	Lymphatic or hematogenous	Surgical debulking, radiotherapy, and chemotherapy

Prognosis

- Prognosis is worse in patients with symptomatic thymoma
- Single most important predicting factor: evidence of invasion
- Associated with an increased risk for second malignancies
  - non-Hodgkin lymphoma, soft tissue sarcomas, digestive system cancers …

Prognosis

Survival of Thymoma by Stage: The Memorial Sloan Kettering Experience in 1995

Stage	5-Year Survival	10-Year Survival
I	90%	80%
II	90%	80%
III	60%	30%
IV	Less than 25%	N/A

Reference

- Robbins “Pathologic basis of disease” 6th edition, *p691-p693*
- 于俊、姜仁惠，”醫學影像診斷學” *p59-p63*
- eMedicine: topic “thymoma”, http://www.emedicine.com/med/topic2752.htm
- National Cancer Institute (NCI) web site, topic “Thymus and thymic carcinoma”, http://www.meb.uni-bonn.de/cancer.gov/CDR0000062912.html#REF_6