Lung Cancer: Case-Based Discussion

Eastern Pulmonary Conference

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Case 1:
Oligometastatic Disease

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Points of Discussion

- Does the patient meet definition for oligometastatic disease
- Important considerations re patient selection for treatment of oligometastatic disease
- Importance of mediastinal staging
  - Site of and number of metastatic lesions
  - Sequence of therapies
  - Metastatic lesions amenable to local ablative therapy (LAT)
  - Performance status and eligibility for surgical resection

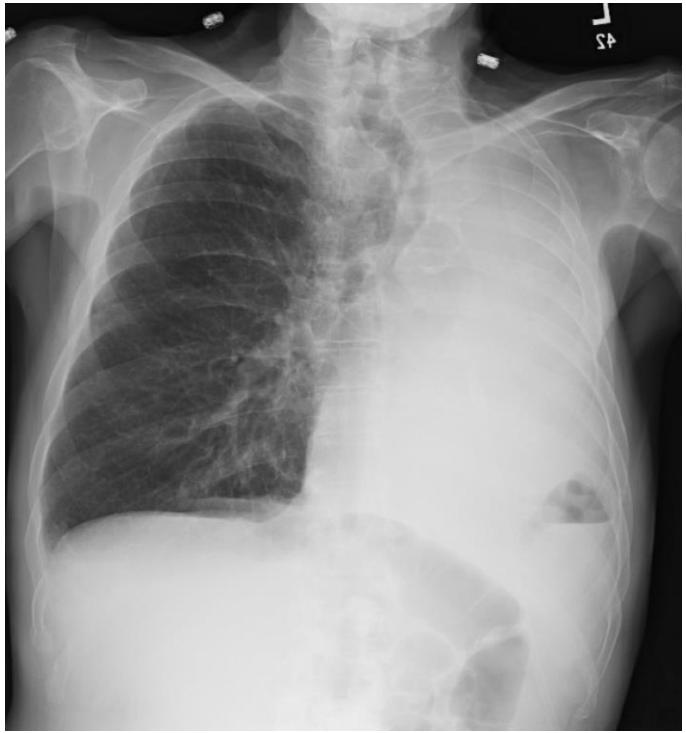
Case 1

66 Y.O. man presented to the ED with progressive dyspnea over the span of a month.

- **Has been smoking daily for 40 years, one pack/day**
- **Has been told he has COPD, but has not seen a physician in over 10 years as he has been "healthy"**
- **Denies pain, but has noticed he cannot walk as briskly as previously**

On exam, RR 20, Sp02 (RA) 93%

- **Diminished breath sounds over the left chest without wheezing**
- **No palpable adenopathy**

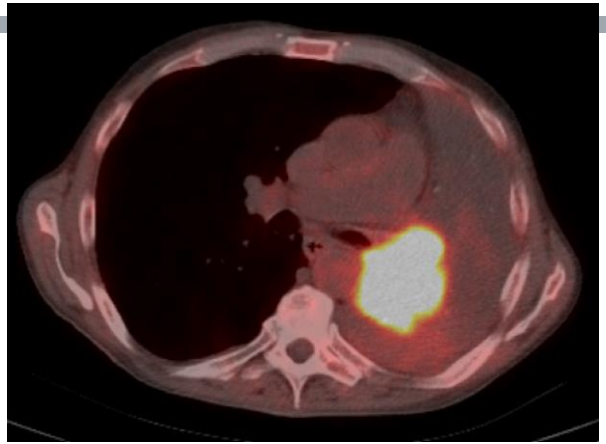


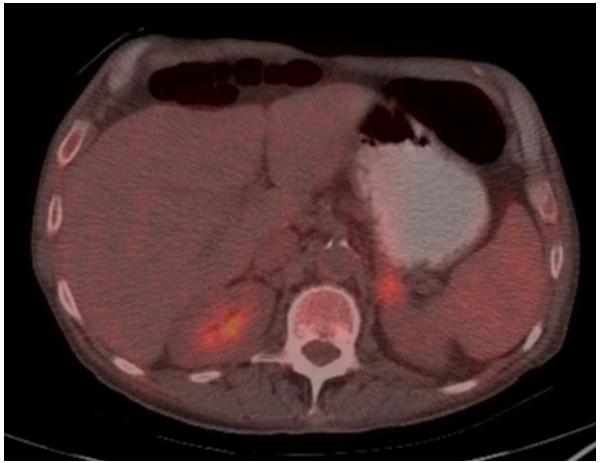
Case 1

- **Chest CT**
  - Consolidation of left lung
  - Shift of mediastinum to left
  - No mediastinal or adenopathy
  - 2.5 cm left adrenal nodule
  - Small left pleural effusion
  - Emphysematous changes in the right lung

Case 1

- **PET-CT**
  - Hyperintense partly necrotic 7 x 7.5 x 9 cm mass in central portion of left lung, involving perihilar portions of both upper and lower lobes. SUV max 22.6.
  - Mass obstructs the left mainstem bronchus with complete lung collapse/consolidation.
  -
  - Small left pleural effusion
  - Left adrenal gland measures 2.5 cm with nodular appearance, SUV max 3.8.
- **Brain MRI**
  - - Unremarkable





Case 1

- **Bronchoscopy:**
  - Endobronchial tumor visible in distal left mainstem bronchus, occluding orifices of both the left upper and left lower lobes. The scope could not be passed beyond the tumor into either lobar bronchus.
  - **EBUS inspection:** No enlarged lymph nodes but cannot distinguish level 10/11 nodes separate from mass.
    - ✓ Stations L4, R4, and 7 nodes sampled: cytology shows abundant lymphocytes, no malignant cells
    - ✓ Endobronchial biopsy: Squamous cell carcinoma; PDL1 < 1%, molecular profiling without targetable mutation

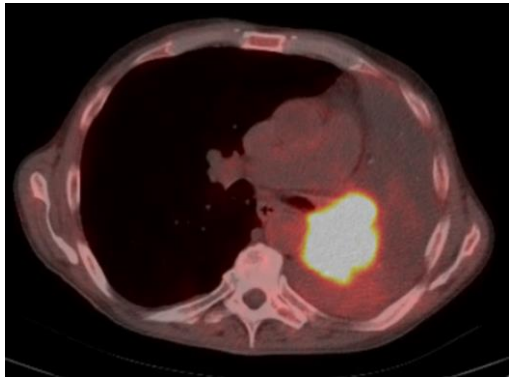
- **Thoracentesis of left pleural effusion:**
  - 100 cc removed, transudative indices, negative cytology

- **Left adrenal gland biopsy:**
  - Metastatic squamous cell carcinoma

Case 1

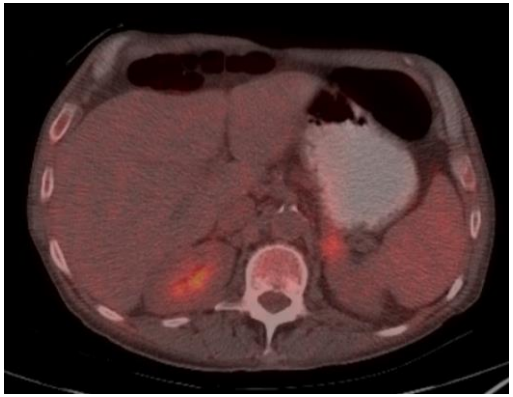
Case 1 summary

- 7 x 7.5 x 9 cm central left lung squamous cell CA
- Left hilar nodes cannot be distinguished from tumor
- Station 4L, 4R, and 7 nodes without tumor
- Left adrenal gland: metastatic squamous cell CA



What is the correct clinical stage?

A. T3N0M1c, Stage IV
B. T3N1M1b, Stage IV
C. T4N0M1c, Stage IV
D. T4N1M1b, Stage IV



Eighth Edition TNM Staging

M descriptor in metastatic NSCLC

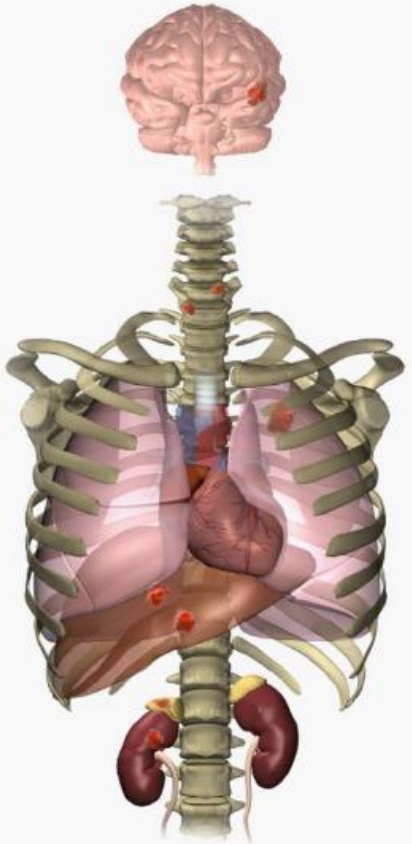
M descriptors

M1a: Contralateral lung nodule; malignant pleural or pericardial effusion

M1b: Single extrathoracic metastasis

M1c: Multiple extrathoracic metastasis

Common extrathoracic sites
- Brain
- Bones
- Liver
- Adrenals
- Kidneys



Median Survival:

M1a 11.4 months

M1b 11.4 months

M1c 6.3 months

Goldstraw P, et al. *J Thorac Oncol* 2016;11:39-51.

Case 1

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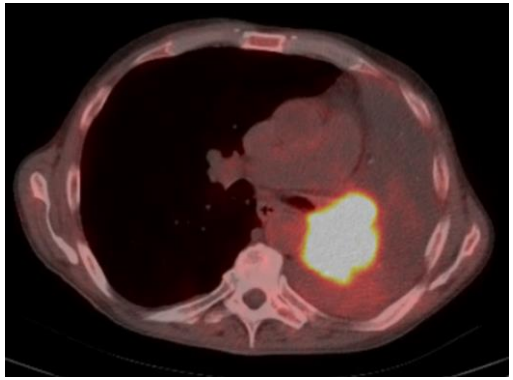

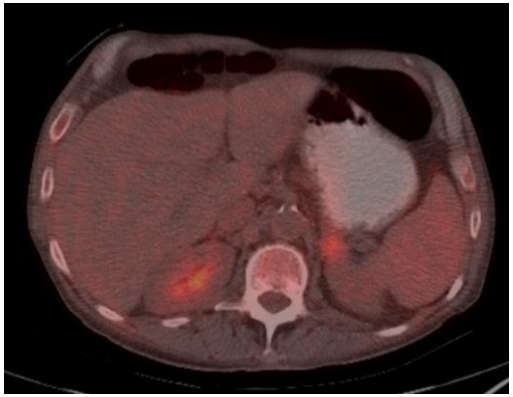

What is the correct clinical stage?

A. T3N0M1c, Stage IV
B. T3N1M1b, Stage IV
C. T4N0M1c, Stage IV
D. **T4N1M1b, Stage IV (Tumor > 7 cm, left hilar nodes possible, single extra thoracic-metastasis)**

Points of Discussion

- Does the patient meet definition for oligometastatic disease
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Case 1

Summary: 66-year-old man with squamous cell carcinoma of the central left lung, biopsy-proven left adrenal metastasis, clinical stage IVb (T4N1M1b).

Which of the following treatment recommendations should you make?

A. **Refer to medical oncology for systemic chemotherapy and/or immunotherapy**

B. **Refer to thoracic surgery for consideration of left pneumonectomy, and to radiation oncology/surgical oncology for consideration of local ablative therapy for adrenal metastasis**

C. **Refer to thoracic surgery for consideration of left pneumonectomy, to medical oncology for systemic therapy, and to radiation oncology/surgical oncology for consideration of local ablative therapy for adrenal metastasis**

Case 1

- **Multidisciplinary tumor board discussion:**
  - Clinical stage IVB (T4 N1 M1b)
  - Performance status 0
  - Potentially oligometastatic approach for stage IV disease with resection of primary lung mass and LAT (resection or SBRT) of adrenal metastasis
- **Evaluated by thoracic surgery, radiation oncology, and medial oncology**
  - Surgical candidate for left pneumonectomy. Mediastinoscopy recommended to confirm results of EBUS. PFT's to evaluate lung function.
  - Adrenal metastasis felt to be more amenable to SBRT than resection
  - Defer final decision about chemotherapy until after surgical resection

Case 2-High Risk Nodule in High Risk Patient

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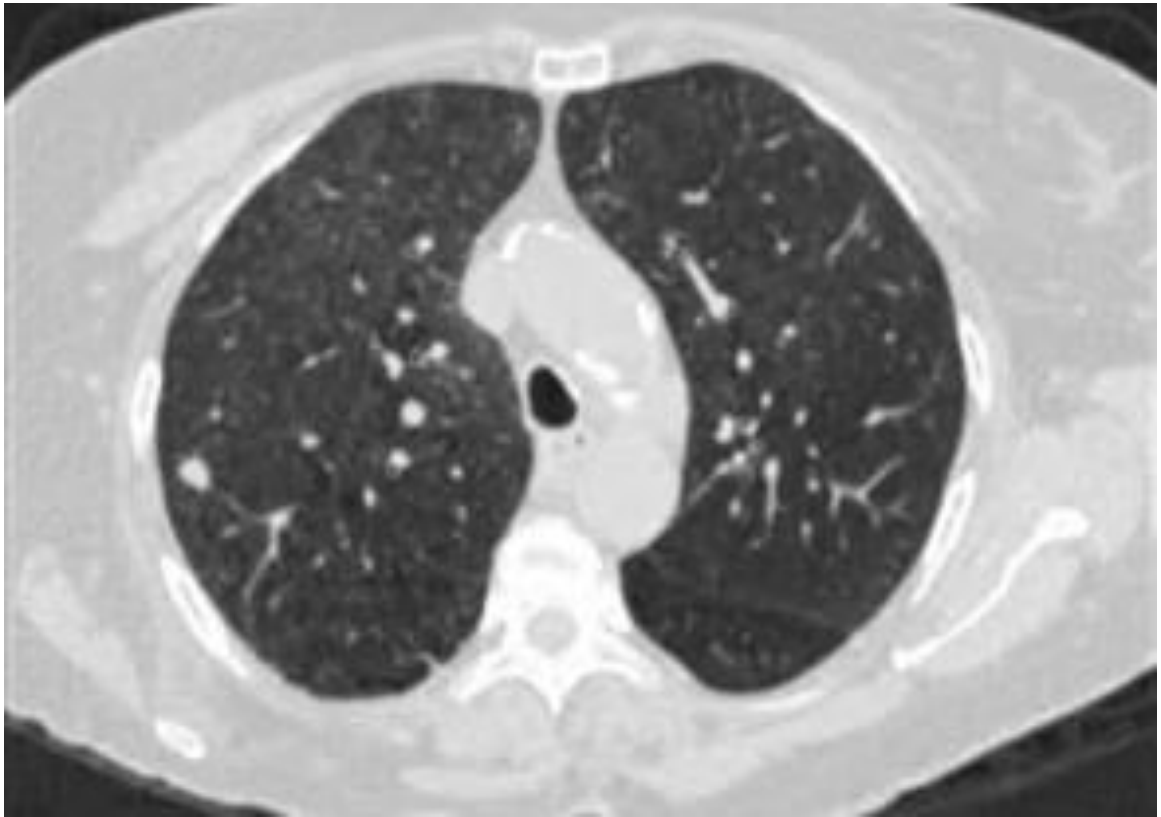
Disclosure of Conflict of Interest

Charles A. Powell:

The speaker is a consultant for:

- **Astra Zeneca**
- **Daiichi-Sankyo**
- **Johnson and Johnson**

70 year old woman with severe COPD



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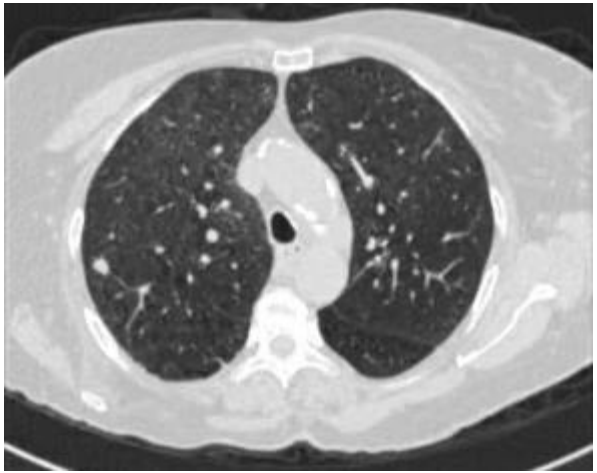

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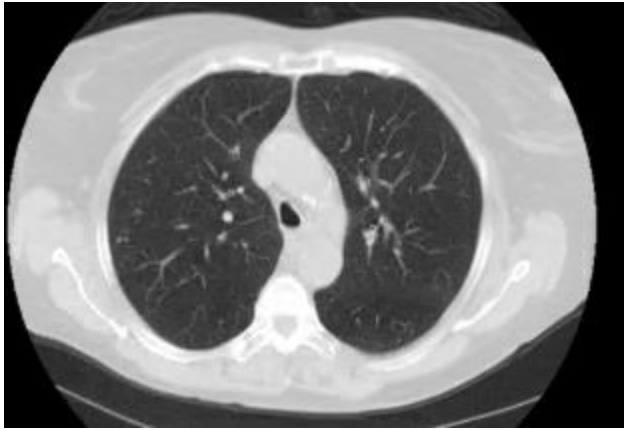
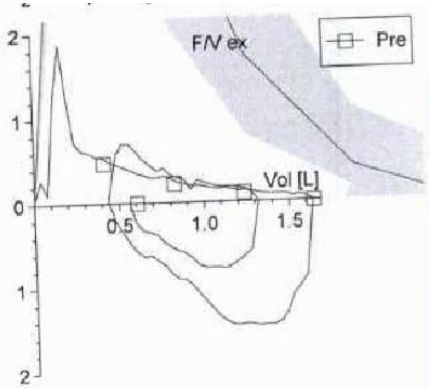


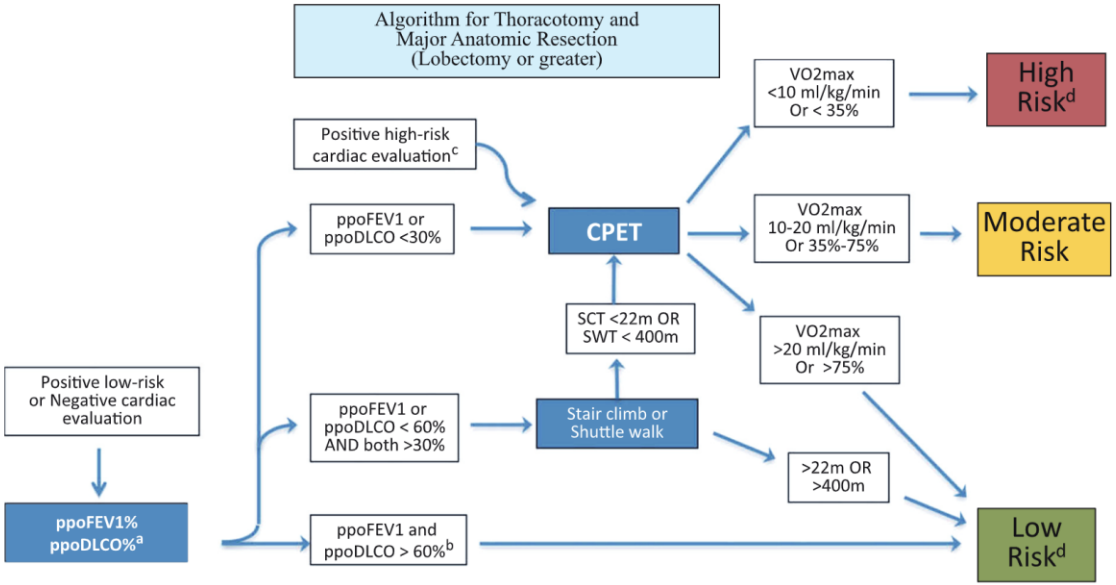
SPIROMETRY

Spirometry

	Ref	Pre	Pre%ref	LLN	ULN
FVC	2.52	1.65	65	1.83	
FEV 1	1.96	0.60	31	1.42	
FEV1/FVC	78	37		65	92
FEF 25-75%	1.71	0.19	11	0.78	
PIF		1.47			
FET100%		12.01			
PEF	5.29	1.90	36	3.80	
FIVC	2.52	1.25	50	1.83	
FIF50%		1.27			
FEF50%	1.71	0.22	13	0.78	
FEF/FIF50		0.17			
SPIR_ECODE		001000			



Physiologic evaluation resection algorithm
Diagnosis and Management of Lung Cancer, 3rd ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines



The patient is unlikely to tolerate a lobectomy

What are the other oncologic treatment options to consider?

The patient is unlikely to tolerate a lobectomy

What are the other oncologic treatment options to consider?

- Surgical
  - Sub-lobar Resection
    - Open, VATS, Robotic
  - Concomitant LVRS
- Radiation
  - SBRT
  - Proton Beam
- Ablation
- Chemotherapy/Immunotherapy

Actual Risks affected by parameters defined here and:
- Patient Factors: Comorbidities, age
- Structural Aspects: center (volume, specialization)
- Process factors: Management of complications
- Surgical access: Thoracotomy vs. minimally invasive

Case 3:
Bilateral lung Lesions

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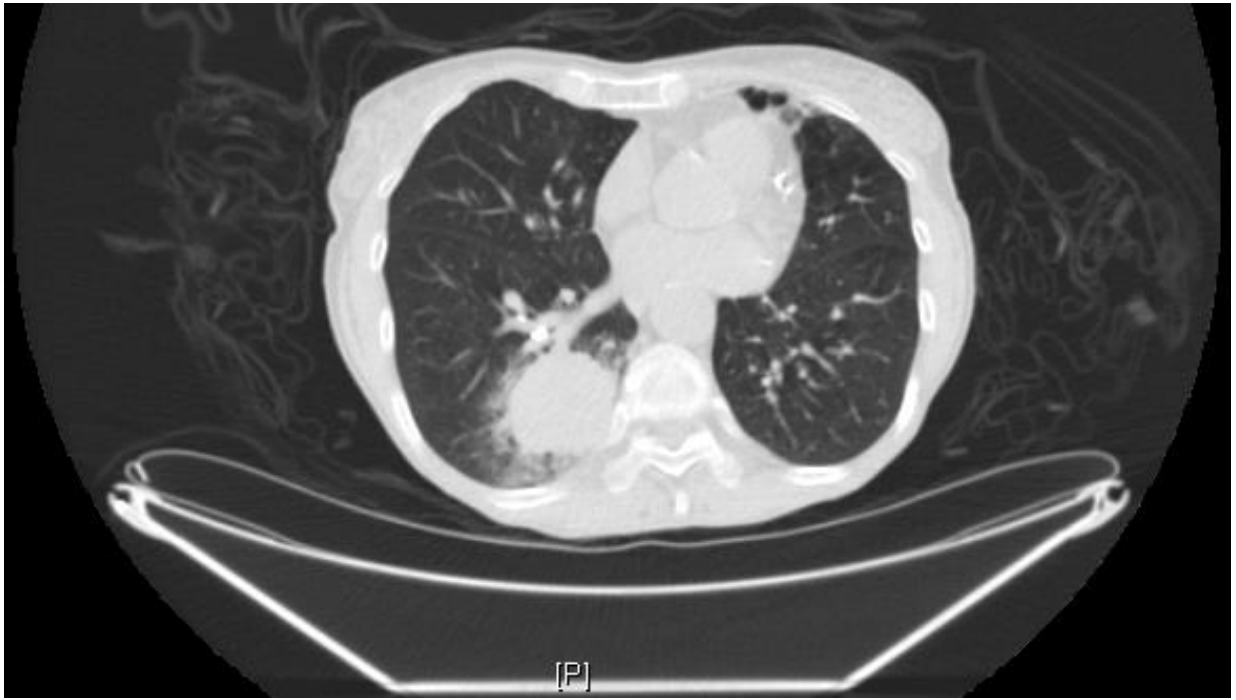
Duke University School of Medicine

Case 3

- A 76 Y.O. woman was being worked up for abdominal pain
- CXR revealed right lung mass
  - No CXRs available for comparison
- She has chronic moderate dyspnea on exertion and chronic non-productive cough
- Active smoker: 1.5 packs per day for 60 years

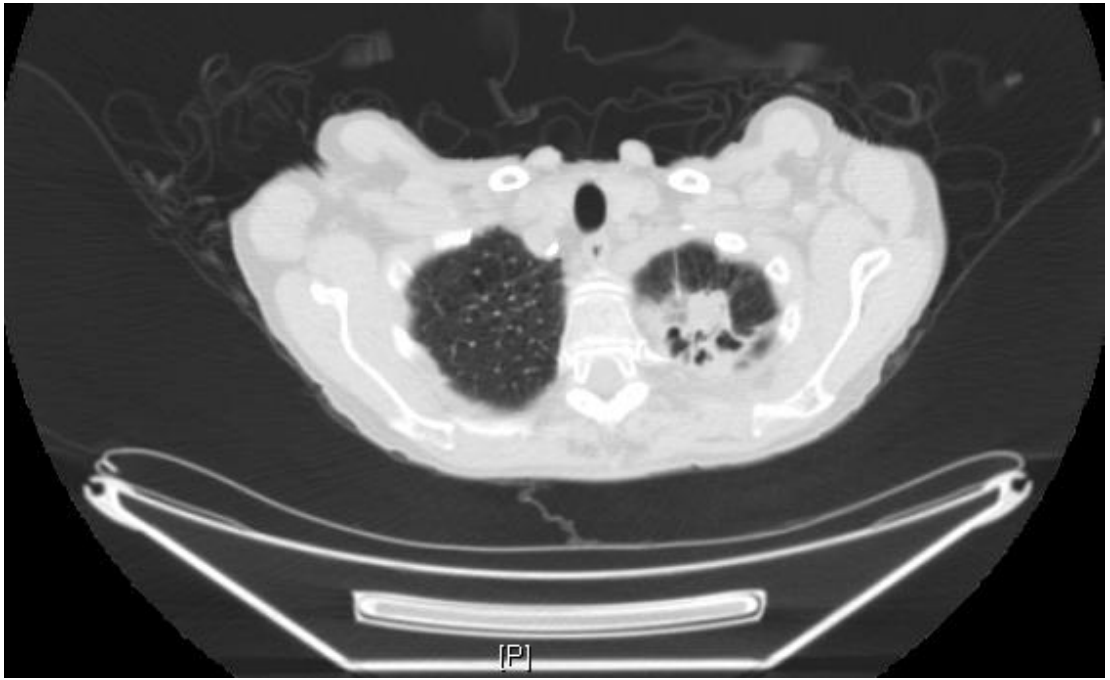
Chest CT

- RLL mass (3.8 cm)



Chest CT

- LUL nodule (1.5 cm)



Chest CT

Chest CT

PET Scan

- RLL mass, 4.8 cm: SUV 20
- LUL nodule, 1.7 cm: SUV 5.8
- Right paratracheal lymph nodes: SUV 2.4
- Subcarinal lymph node: SUV 4.1

What Clinical Stage Is this Cancer?

1. Stage IB
2. Stage IIIA
3. Stage IIIB
4. Stage IV

What Clinical Stage Is this Cancer?

T	• T2a
	  • Based on size 3-5 cm
	  • Also T2 based on possible invasion of the visceral pleura
	  • If the chest wall is involved , then it is T3

N	• N2 • Based on possible ipsilateral mediastinal lymph nodes (station 7 and 4R)
M	• M0 • If the LUL lung nodules is cancer, then it is M1a or a synchronous primary

Clinical Stage

T2aN0M0

- Stage 1B

T2aN2M0

- Stage IIIA

PFT

- FVC: 1.66, 60%
- FEV1: 0.81, 39%
- FEV1/FVC: 49%
- DLCO: 6.8, 40%

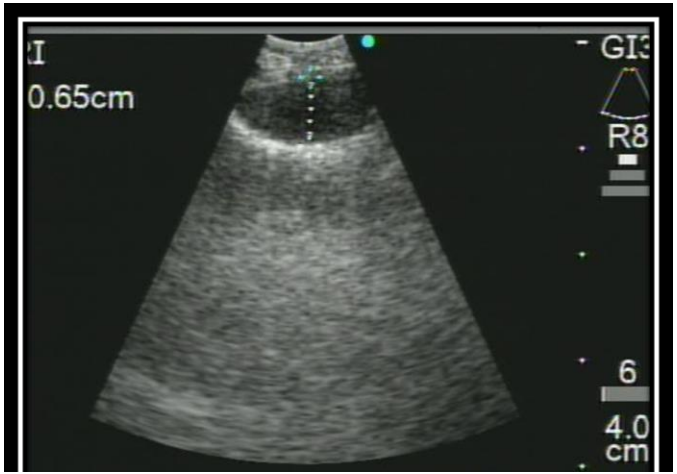
What is your next step?

1. TTNA of right lower lobe mass
2. Bronchoscopy with EBUS of mediastinal lymph nodes
3. VATS resection of LUL nodule first
4. Mediastinoscopy and VATS RLL lobectomy

Performing a Staging EBUS-TBNA Procedure

- Always start on the contralateral side of the mediastinum relative to the suspected primary tumor nodule/mass

- Sample any lymph node that is >5 mm (short diameter)



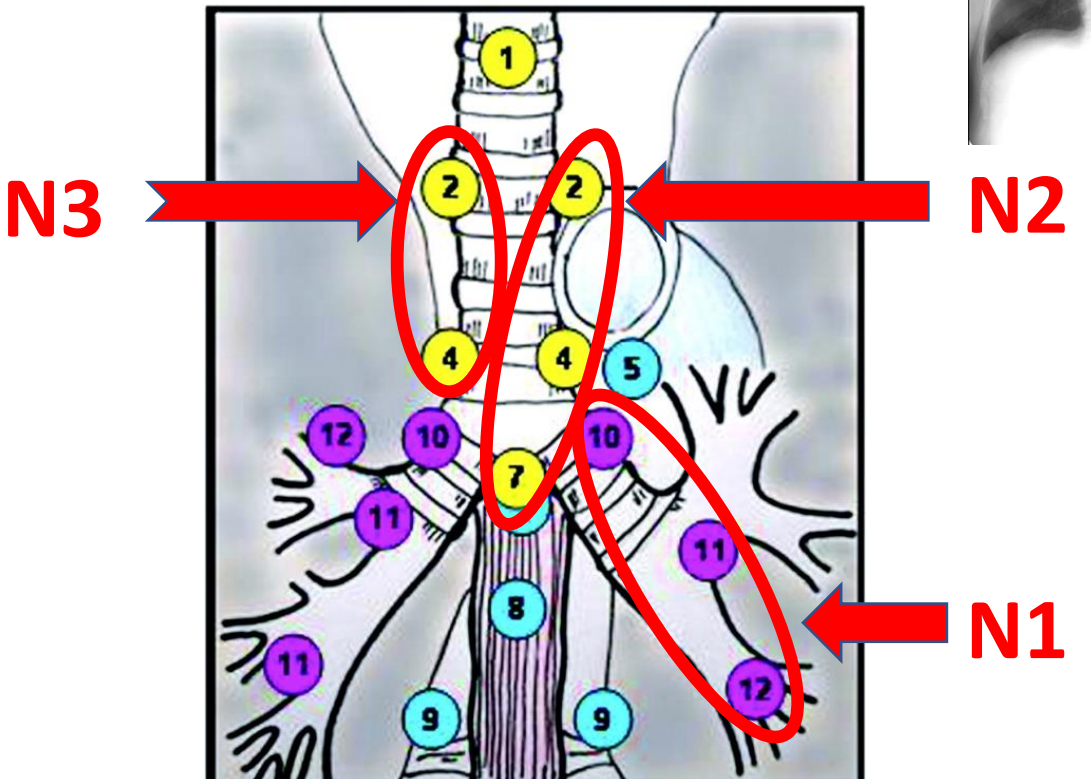
Order of Mediastinal Sampling

Lung Cancer Staging

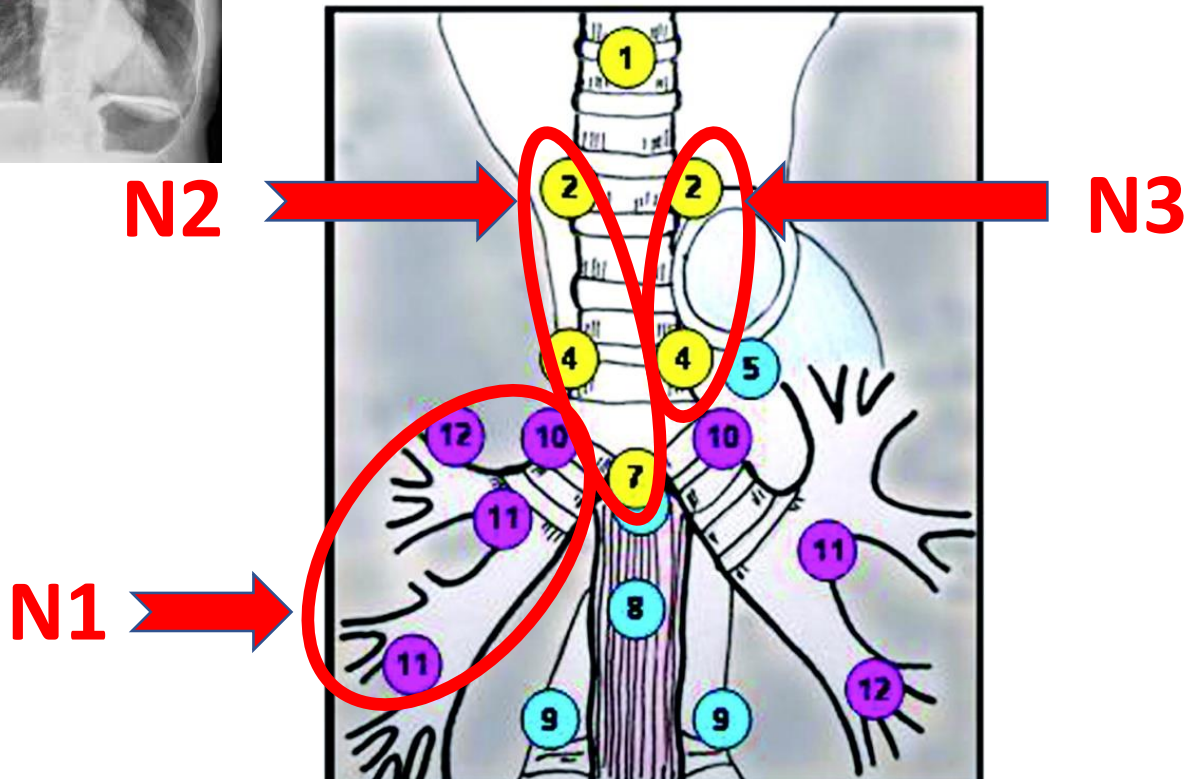
1st Sample → 2nd Sample → 3rd Sample

N3	N2	N1
Lymph nodes on the contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular side of suspicious lesion	Lymph nodes on the ipsilateral mediastinal and/or subcarinal side of the suspicious lesion	Lymph nodes on the ipsilateral peribronchial and/or ipsilateral hilar side of the suspicious lesion. Or intrapulmonary nodes, including involvement by direct extension

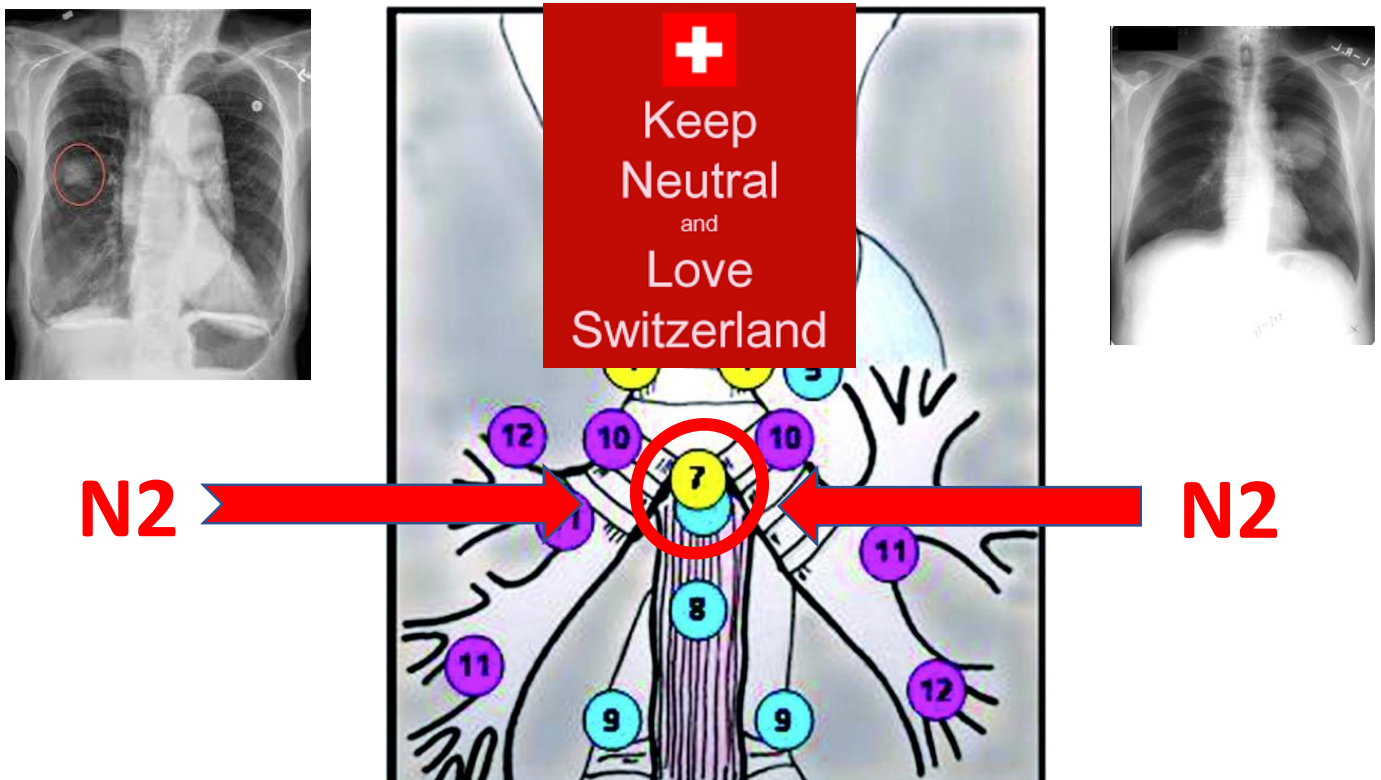
For Left Sided Nodules/Masses



For Right Sided Nodules/Masses



The “Neutral” LN Station 7



Case 3

- Bronchoscopy with EBUS performed:
  - TBNA of 4R and 7 lymph nodes: benign lymphoid tissue
  - No other enlarged lymph nodes found on EBUS examination
  - Biopsy of the RLL mass revealed adenocarcinoma
  - EGFR, ALK, ROS-1 and PDL-1 negative

Case 3

- Patient was deemed a poor surgical candidate
- Morbidity of sampling the LUL nodule was deemed go high and biopsy deferred
- Patient was treated with combination XRT and chemotherapy with observation of response of RLL mass and LUL nodule