Lung Cancer with Mediastinum Invasion: the Consideration of Radiotherapy

Case Number: RT2009 - 18(M)

Potential Audiences: Intent Doctor, Oncology Special Nurse, Resident Doctor

Purpose: to present a case of lung cacer, cT4N2M0, stage IIIB; to discuss the RT consideration

Scenario: You are radiotherapy (RT) Intent Doctor/Special Nurse/Resident Doctor, and you are assigned to evaluate the following patient before visiting of your RT attending physician. Please review the following description carefully; your RT attending physician will visit this patient later and discuss with you after your review.

Case Presentation:

This 78–year-old male patient, **周 OO**, was referred to us for radiotherapy assessment for 'Lung cancer, stage IIIB'.

S:

<<Refer from CHE section for RT assessment>>

1. In 2005/10, lung biopsy reported adenocarcinoma, moderately differentiated (Gr. 2). The patient refused any further management due to no symptoms.
2. In 2007/12, he had symptoms of easy choking and total hoarseness. Thyroplasy was performed for the left vocal cord paralysis.
3. In 2007/12, the re-evaluation of cT4N3M0, stage IIIB was found. Oral Vinorelbine was given with 3 courses till now.
4. On 2008/01/23, he was referred to our RT section for further evaluation and RT care.

Review of symptoms: easy choking and hoarseness for about 3 months with markedly improved after thyroplasy; cough with sputum; left upper back pain

Hx:

1. chronic hepatitis B
2. allergy to pyrin

O:

1. ECOG: 1-2, ambulatory status, speech: still mild hoarseness
2. A surgical scar over the anterior left neck
3. No SCF LNs, bilateral
4. No back knocking pain
5. Free movement of the four limbs
6. BUN/Cr in 2008/01: 17/0.6

Key Image(s):

Fig. 1. CXR

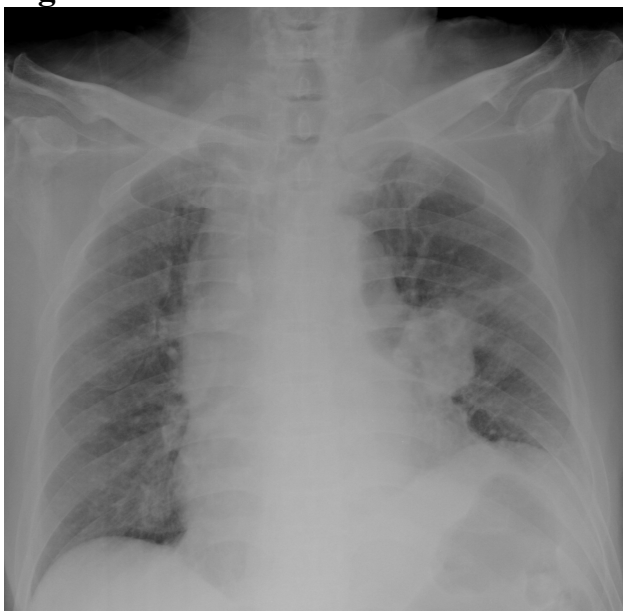


Fig. 2. Panel A. Chest CT

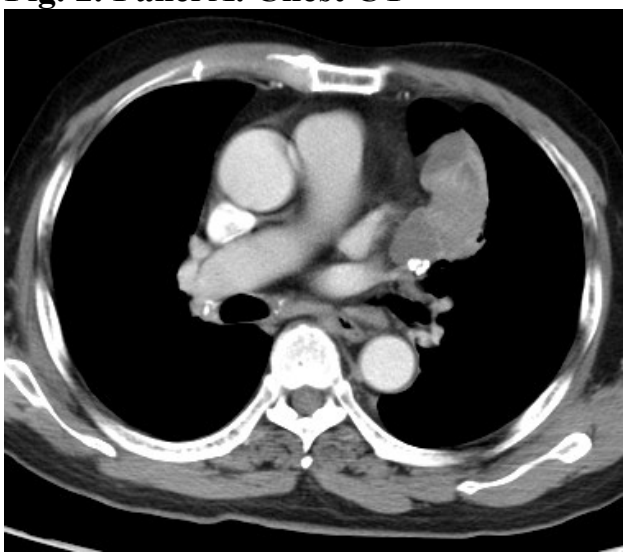
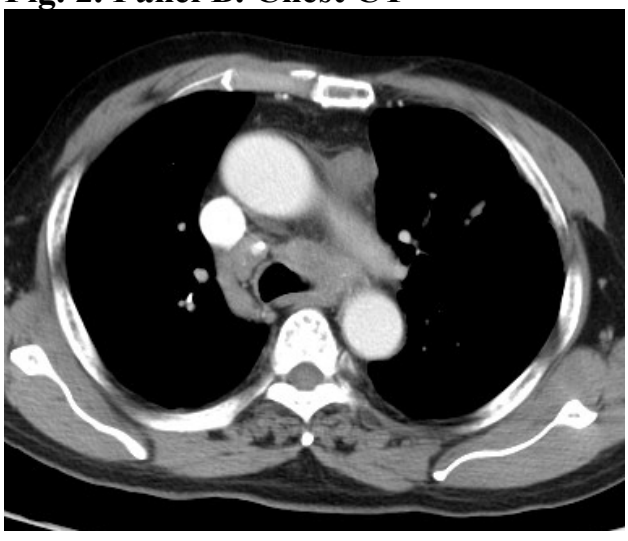


Fig. 2. Panel B. Chest CT



Questions & Discussions:

(Please answer the following questions commented from your RT attending physician.)

Q1: What are your *findings/interpretations* for the above key image(s)?

(After your RT attending physician discussed with the radiologist by telephone, the radiologist confirmed preliminarily that no distant metastases were found based on the chest CT films, including lung to lung, liver, visible ribs & spine, and adrenal glands. And, he said that some clinically significant lymph nodes over the contralateral mediastinum were found. Please further answer the following questions.)

Q2: What is your *clinical cancer stage*, according to the AJCC 2006, for this case?

Q3: What is your *pathologic cancer stage*, according to the AJCC 2006, for this case?

Q4: What are your *Oncology Diagnosis* and/or other *Assessments* for this case?

Q5: What is your *Oncology Plan* for this case?

Q6: What is your *Radiotherapy Plan* for this case?
(Please reply with the following form: *Indication/Contraindication, Goal, Target & Volume, Technique, and Dose & Fractionation*.)

Q7: Please denote the N classification of the lung cancer.

Questions & Discussions: (with potential answers)

(Please answer the following questions commented from your RT attending physician.)

Q1: What are your *findings/interpretations* for the above key image(s)?

A1: As described in the last attached page.

(After your RT attending physician discussed with the radiologist by telephone, the radiologist confirmed preliminarily that no distant metastases were found based on the chest CT films, including lung to lung, liver, visible ribs & spine, and adrenal glands. And, he said that some clinically significant lymph nodes over the contralateral mediastinum were found. Please further answer the following questions.)

Q2: What is your *clinical cancer stage*, according to the AJCC 2006, for this case?

A2: cT4(mediastinum direct invasion)N3(contralateral mediastinum LNs)M0, stage IIIB (2007/12, AJCC 2006)

Q3: What is your *pathologic cancer stage*, according to the AJCC 2006, for this case?

A3: no pathology stage can be defined in this case.

Q4: What are your *Oncology Diagnosis* and/or other *Assessments* for this case?

A4:

Adenocarcinoma, moderately differentiated (Gr. 2), of the lung, LUL, (Dx in 2005/10), cT4N3M0, stage IIIB (2007/12, AJCC 2002), with left vocal cord paralysis, post thyroplasty, on oral Vinorelbine (since 2007/12)

Q5: What is your *Oncology Plan* for this case?

A5:

1. keep oral Vinorelbine
2. add 3DCRT
3. Explain

Q6: What is your *Radiotherapy Plan* for this case?

(Please reply with the following form: *Indication/Contraindication, Goal, Target & Volume, Technique, and Dose & Fractionation*.)

A6: RT Plan may be designed as the following one:

(1). **Indication**: cT4N3M0, stage IIIB lung cancer
(2). **Goal**: potentially curative in CCRT setting
(3). **Target & Volume**: lung mass and mediastinum LN-drainage region irradiation
(4). **Technique**: 3DCRT or IMRT
(5). **Dose & Fractionation**: 5940-6300 cGy in 33-35 fractions to the primary lung mass and 4500-5040 cGy in 25-28 fractions to the mediastinum region.

Q7: Please denote the N classification of the lung cancer.

A7: as the following figure [AJCC 2006].

Regional Lymph Nodes (N)

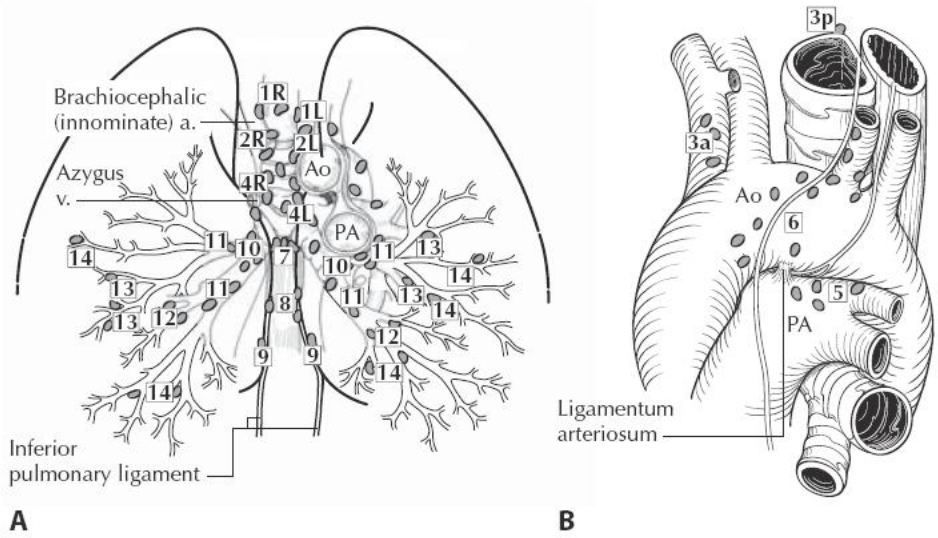
NX Regional lymph nodes cannot be assessed

N0 No regional lymph node metastasis

N1 Metastasis to ipsilateral peribronchial and/or ipsilateral hilar lymph nodes, and intrapulmonary nodes including involvement by direct extension of the primary tumor (Figure 19.7)

N2 Metastasis to ipsilateral mediastinal and/or subcarinal lymph nodes(s) (Figure 19.8)

N3 Metastasis to contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s) (Figure 19.9)



N2 nodes:		N1 nodes:
1 Highest medistinal	5 Subaortic	10 Hilar
2 Upper paratracheal	6 Para-aortic	11 Interlobar
3 Prevascular and retrotracheal	7 Subcarinal	12 Lobar nodes bronchi
4 Lower paratracheal	8 Paraesophageal	13 Segmental
	9 Pulmonary ligament	14 Subsegmental

FIGURE 19.2. Lymph node maps of the lung.

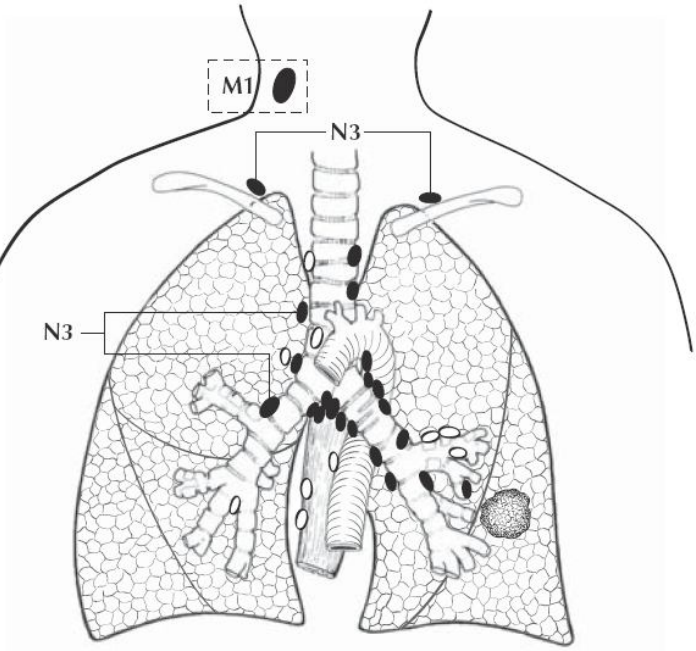


FIGURE 19.9. N3 is defined as metastasis to contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s) whereas M1 is defined as distant metastasis.

Further Readings & References: NCCN 2009 & AJCC 2006

Key Image(s): (with marked)

Fig. 1. CXR

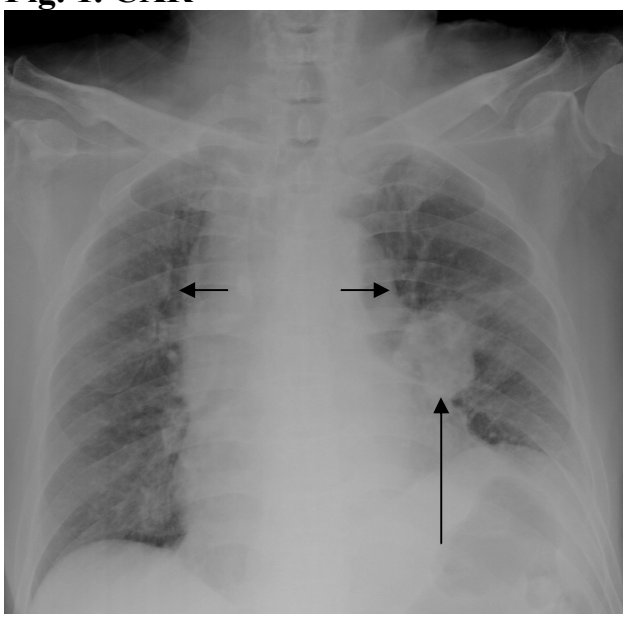


Fig. 1. The 4-5 cm primary lung mass over the left hilar region (as the long black arrow); the relatively widening mediastinum that suggests mediastinum LNs (as the short black arrows).

Fig. 2. Panel A. Chest CT

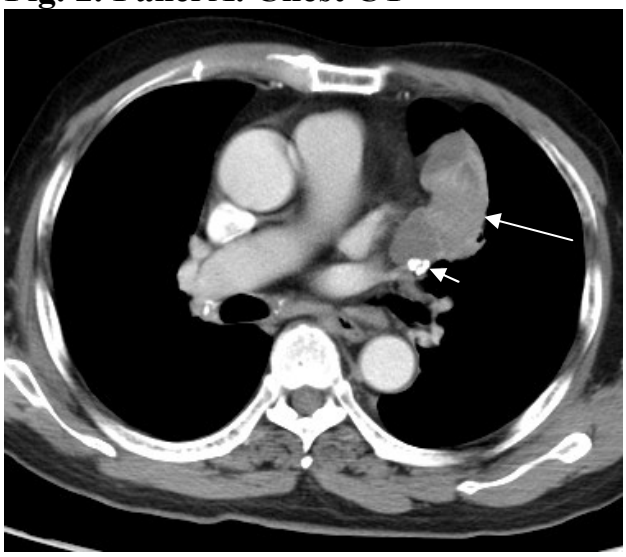


Fig. 2. Panel A. a more than 5 cm primary lung mass over the left lung with direct invasion to the mediastinum, c/w T4 classification (as the long white arrow); some calcification were seen (as the short white arrow).

Fig. 2. Panel B. Chest CT

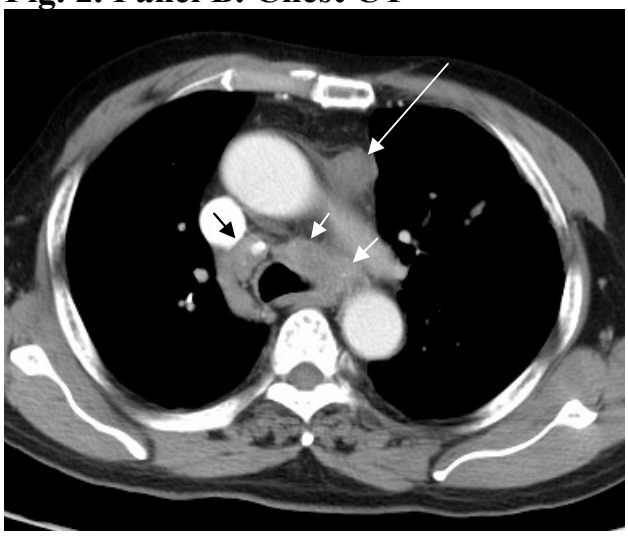


Fig. 2. Panel B. a 2.5-cm pre-vascular LN (as the long white arrow); two AP window LNs (as the two short white arrows); a PTRC LN (as the black arrow). Abbreviation: PTRC, pre-trachea & retro-cava.