Lung Cancer with Multiple Metastases: How to Choice the First Irradiated Target in Consideration of Palliative Radiotherapy?

Case Number: RT2009 - 46(M)

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

Purpose: to present a case of lung cancer with multiple metastases; to discuss how to choice the first irradiated target in this case

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 34–year-old female patient, 張 00, was referred to us for radiotherapy assessment of ‘Lung cancer / adenocarcinoma with bone and liver metastasis, s/p chemotherapy (CDDP/Gemzar/Iressa, 2008/06-2009/02) with disease progression.’

S:
1. In 2008/06, lung cancer was histologically proven in other hospital. Stage IV was told and chemotherapy was given. Targeted therapy was given thereafter.
2. In 2009/03, disease progression was found. She then came to our hospital for further help. One cycle salvage chemotherapy was done.
3. On 2009/03/09, you visited this patient in the ward.

Histories: NDKA; no major disease history.
Review of systems: hoarseness and easy choking for about 1-2 months; bilateral lower limbs lymphedema for about 4-5 days; upper back pain and the left upper arm numbness for about months.

O:
1. General Condition: ECOG, 2-3; lying on bed; speech: small voice with mild hoarsenss
2. Physical Examinations:
   (1). HEENT & SCF: no neck LNs; (2). CHE: neg.; (3). ABD: fullness
   (4). Back & Spine: significant knocking pain over the upper middle back
   (5). Extremities: Gr. 2-3 lymphedema over the bilateral lower limbs; minimal weakness of the left upper limb muscle power
3. ***Pathology in 2008/06, other hospital, pleural (formal report not seen; cytology or histology?): adenocarcinoma
4. Images:
   (1). Chest CT in 2008/06, other hospital (image not seen): left lower lobe lung mass with pleural thickness and lesions with multiple liver mets.
   (2). Chest CT in 2009/02: c/w LLL, lung cancer disease progression, rc-T4N3M1(liver, lung, T spine, left axillary LNs, retroperitoneal LNs), stage IV
   (3). Bone scan in 2009/03: c/w upper T spine bone mets
5. Others: no CEA data
Key Image(s):

Fig. 1. Chest CT

Fig. 2. Chest CT

Fig. 3. 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)?

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.*
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.

Q2: What is your clinical cancer stage, according to the AJCC 2006, for this case?
A2: The initial stage is cT4N3M1(bone & liver), stage IV(2008/06, other hospital); the re-treatment cancer stage is re-T4N3M1(liver, bone, distant LNs), re-stage IV (2009/03, 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: Oncology diagnosis: Adenocarcinoma of the lung, cT4N3M1(bone & liver), stage IV(2008/06, other hospital), s/p chemotherapy (2008/06-2009/02, CDDP/Gemzar/Iressa), with disease progression, re-T4N3M1(liver, bone, distant LNs), re-stage IV (2009/03, AJCC 2006), post 1 cycle of salvage chemotherapy (2009/03), with spinal cord compression (T2-3 level, upper back knocking pain and left upper limbs numbness), with suspect vocal cord paralysis (hoarseness and easy choking for 1-2 months), with retroperitoneal LN metastases (bilateral lower limbs lymphedema)

Q5: What is your Oncology Plan for this case?
A5: (1). Arrange spine MRI to assess the T2-3 spinal mets region to further assess the spinal cord compression  
(2). Keep chemotherapy and add RT  
(3). Arrange ENT OPD FU for suspect vocal cord paralysis for assessment possibility of thyroplasty; arrange RT OPD FU if patient discharge  
(4) CEA test

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: Lung cancer with symptomatic mets, with spinal cord compression  
(2). Goal: palliative with palliative goal of reserving neural function in spinal cord compression region; with palliative goal of symptoms alleviation in retroperitoneal region and may be vocal cord paralysis region.  
(3). Target & Volume: target 1, T2-3 spinal cord compression region; target 2, retroperitoneal LN mets region.  
(4). Technique: 3DCRT  
(5). Dose & Fractionation: 4500-5040 cGy in 25-28 fractions to the target 1; 3960-4500 cGy in 22-25 fractions to the target 2.

Further Readings & References:
NCCN 2009 & Perez 2008 & AJCC 2006

Radiation Oncologist
Hon-Yi Lin 2009/03/11
Fig. 1. Upper T spine metastasis, may be T2-3, with the left para-spinal mass (as the white arrows); with extension into the spinal canal (through spinal foramen) with spinal cord compression (the compression line as the black arrow).

Fig. 2. A large mediastinum LN with central necrosis over the pre-vascular space (as the long white arrow); other mediastinum mass and LNs was also noted (as the short white arrows); multiple pleural nodular lesions were also found (as the white arrow heads).

Fig. 3. Multiple liver metastases (as the short white arrows); confluent LNs over the retroperitoneal region (as the long white arrow).