Current Concepts & Controversies in Locally Advanced NSCLC, Case 2: 
Ambiguous Imaging Findings after Chemo/Radiation

Dr. George Blumenschein  
Medical Oncologist  
Associate Professor, Thoracic & Head/Neck Oncology  
MD Anderson Cancer Center  
Houston, TX

Dr. Walter Curran  
Radiation Oncologist  
Executive Director  
Winship Cancer Center  
Emory University  
Atlanta, GA

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Conflicts of Interest

Dr. George Blumenschein
No significant conflicts of interest to declare.

Dr. Walter J. Curran
No significant conflicts of interest to declare.

Young woman with Stage IIIB NSCLC

- 39 year old woman referred with a Pancoast tumor, overall staging consistent with stage IIIB NSCLC
- Teacher, smoked 2 ppd x 25 years
- Known emphysema/COPD
- Lost 25 pounds over 3 months: decreasing appetite and increasing fatigue, non-exertional chest pain in upper right chest anteriorly
  - Also minimal dry cough, without hemoptysis
Ongoing work-up, diagnosis

- Sees her local physician, who performs CXR: large RUL pulmonary mass
- CT chest: 8.3 x 6 cm right apex medially
  - Adjacent bullous emphysematous changes L>R (impressive)
- Referred to pulmonologist → bronchoscopy, non-diagnostic
- CT-guided biopsy: squamous cell NSCLC, pos for CK7, neg CK20, TTF-1 neg, P63 pos

Ongoing work-up, diagnosis

- PET/CT shows max SUV 9.5 in primary right apical mass, abutting pleural surface and first rib, no increased activity in rib or chest wall
- Mildly increased SUV in precarinal nodes, mSUV 2.4, increased in right suprahilar region with mSUV 3.0; small nodes adjacent to left mainstem have SUV 3.2, suspicious for involvement.
- PFTs: FEV1 1.83 liters (51% of pred); DLCO 47% pred
Initial Imaging

Is mediastinal involvement in someone with a Pancoast tumor a reason not to pursue surgery?
Treating for Stage IIIB NSCLC

- She receives cisplatin/etoposide (3 cycles, actually) with concurrent RT to 66 Gy, including mediastinum
- Tolerates it well, some mild nausea, fatigue, but eating, maintaining/increasing weight

When and how do you assess response after chemo/radiation?
What do you consider to be the role of PET/CT scanning vs. CT alone?

PET/CT Imaging after Chemo/Radiation

- Completes definitive chemo/radiation, and she undergoes repeat PET/CT ~2.5 weeks later
- Tumor smaller, slightly less metabolic uptake
- Mediastinum now “background”, mSUV 2.4, neg on left
Is there any further intervention that you would recommend at this point, either systemic or local therapy?

**HOG LUN01-24 Trial:**
*Direct Test of Consolidation Docetaxel*

- Unresectable stage III NSCLC; FEV1 ≥1.0L
- Primary Endpoint: Improvement in median survival, 15 → 25 months
- Trial stopped early due to DSMB recommendation at planned interim time point (futility)

- **Cisplatin/etoposide x2 w/concurrent chest RT to 59.4 Gy**
- **Consolidation Docetaxel 75mg/m2 x 3**
- **Observation**

Accrued: 203 pts → 147 pts (68%)

HOG LUN01-24 Trial: Direct Test of Consolidation Docetaxel

Progression-Free Survival

Overall Survival

Hanna, J Clin Oncol 2008

RTOG/Intergroup Trial of Chemo/Radiation to Either 60 or 74 Gray, +/- Erbitux Cetuximab

Primary Endpoint: Overall Survival

Concurrent Chemo/Radiation

Consolidation

Unresectable Stage III NSCLC, N = 512

Carbo/Pac weekly Radiation to 60 Gy + cetuximab weekly

Carbo/Pac weekly Radiation to 74 Gy + cetuximab weekly

Carbo/Pac weekly Radiation to 74 Gy
Carbo/Pac weekly with RT = minimal or no systemic activity

Cisplatin/etoposide (full dose) with RT = good systemic activity

So would you say:

Further therapy for potential residual localized disease after full dose chemo/radiation?
Proceeds to Mediastinoscopy and Right Upper Lobectomy

- She has negative mediastinoscopy
- Proceeds to right upper lobectomy
- Pathology shows extensive necrosis, no viable tumor (primary mass or nodes)

Scans with residual findings but pathology completely negative.

What does this tell us about interpreting outcomes by scans after chemo/radiation?
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