The Role of Surgery in The Multidisciplinary Management of Lung Cancer

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GRACE Targeted Therapies in Lung Cancer Patient Forum

No Disclosures
Aims

• Role of surgery in lung cancer treatment
• Surgical role in advanced stage lung cancer treatment
• Utility of the multidisciplinary approach to lung cancer management

Mrs. P.

• A 67 year old woman, former smoker
• Undergoes annual chest X-ray for routine follow up of lymphoma
  – New lung nodule in the right upper medial lung field

  Asymptomatic
  No cough
  No weight loss
Mrs. P’s Non-contrast Chest CT

- 23 x 20 mm RUL nodule
- No axillary, supraclavicular, mediastinal or hilar lymphadenopathy

Mrs. P’s Needle Biopsy

Squamous Cell Carcinoma
Mrs P’s PET-CT

Isolated to the lung only

Lung Cancer Management

• Advances in:
  – Accuracy of imaging, diagnosis
  – Minimally invasive surgical approaches
  – Postoperative care
  – Radiation oncology
  – Chemotherapy
  – Development of Multidisciplinary Clinics

• Tenants of lung cancer management haven’t changed much
Non-Small Cell Lung Cancer Treatment
Spira, Ettinger, New England Journal of Medicine 2004

<table>
<thead>
<tr>
<th>Stage</th>
<th>Primary Treatment</th>
<th>Adjuvant Therapy</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>Non-small-cell lung cancer</td>
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<tr>
<td>I</td>
<td>Surgical resection</td>
<td>Chemotherapy†</td>
<td>5-Yr survival rate, &gt;60–70%</td>
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<tr>
<td>II</td>
<td>Surgical resection</td>
<td>Chemotherapy, with or without radiotherapy†</td>
<td>5-Yr survival rate, &gt;40–50%</td>
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<tr>
<td>IIIA (resectable)</td>
<td>Preoperative chemotherapy followed by surgical resection (preferable) or surgical resection</td>
<td>Radiotherapy with chemotherapy (if not given previously) or without chemotherapy</td>
<td>5-Yr survival rate, 15–30%</td>
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<tr>
<td>IIIA (unresectable) or IIIB (involvement of contralateral or supradiaphragmatic lymph nodes)</td>
<td>Chemotherapy plus concurrent radiotherapy (preferable) or chemotherapy followed by radiotherapy</td>
<td>None</td>
<td>5-Yr survival rate, 10–20%</td>
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<tr>
<td>IIIB (pleural effusion) or IV</td>
<td>Chemotherapy with 2 agents for 3 or 4 cycles (preferable)</td>
<td>None</td>
<td>Median survival, 8–10 mo 1-Yr survival rate, 30–35% 2-Yr survival rate, 10–15% 5-Yr survival rate, 10–15%</td>
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<td>Small-cell lung cancer</td>
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<tr>
<td>Limited disease:</td>
<td>Chemotherapy plus concurrent radiotherapy</td>
<td>None</td>
<td>5-Yr survival rate, 15–25%</td>
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<tr>
<td>Extensive disease:</td>
<td>Chemotherapy</td>
<td>None</td>
<td>5-Yr survival rate, &lt;5%</td>
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Mrs. P.

Mediastinal staging
VATS right upper lobectomy
Stage IB (T2aN0M0) squamous cell carcinoma
0/26 lymph nodes positive

- Treatment: follow up Exams with CT imaging
  - Q6 mo x 2 yrs, then yearly (NCCN guidelines)
Treatment of Stage I & II Lung Cancer

• Accurate diagnosis
  – Needle biopsy, wedge biopsy, nav bronch
• Accurate staging
  – Imaging (CT, PET-CT, MRI brain)
  – Nodal staging (EBUS, Mediastinoscopy)
• Resection of the primary lesion
  – Lobectomy vs. segmentectomy vs. pneumonectomy
• Confirmation of pathologic staging & treatment plan
  – Chemotherapy (>4cm, any nodal disease)
• Surveillance plan

Treatment of Stage IIIA Lung Cancer

• T1/T2 N2 M0
• T3 N1/N2 M0
• T4 N0/N1 M0

• Induction Chemo- Radiotherapy
• Followed by Surgery
  – Minimally invasive surgery still an option
Video-Assisted Thoracic Surgery “VATS”

– Biopsy & Treatment
  • Resect or biopsy nodule
  • Resect anatomic segment or lobe
– Can reach lesions throughout lungs
– Can concurrently sample LNs, pleura, pleural fluid

– Limitations/ Contraindications:
  • Patient wont tolerate lung surgery
  • Tumor too bulky to safely isolate blood vessels

Surgical Role in Advanced Stage Lung Cancer Treatment
When is surgery an option for advanced disease?

- Solitary or limited metastatic disease
  - to the brain, to the adrenal gland
  - Oligometastatic disease - distant relapse in only a limited number of regions, which may be resected
  - Oligoprogression – growth is limited & resectable
- When disease may represent concurrent low stage tumors instead of metastatic disease
- When favorable response to chemotherapy has occurred
- Re-resection for new growth

Mrs. K.

- 75 yo former smoker
  - Multiple lung nodules on screening chest CT
    - RUL nodule 1: 14x12 mm
    - RUL nodule 2: 12x11 mm
Mrs. K.

- Multiple lung nodules on screening chest CT
  - RUL nodule 1: 14x12 mm
  - RUL nodule 2: 12x11 mm
  - LLL ground glass opacity: 17 mm
  - LLL cavitary nodule: 15mm
  - Enlarged R hilar and paratracheal lymph nodes

Mrs. K.

- Review at Multidisciplinary Lung Cancer Clinic:
  - RUL nodules suspicious for cancer
    - Recommend: CT-guided biopsy
    - If positive for cancer:
      - PET-CT, MRI brain, PFTs, TTE
  - LLL cavitary nodule indeterminate (ca vs. infection)
    - Recommend: watching
  - LLL GGO
    - Recommend: watching
Mrs. K.

- CT-guided Needle Bx:
  - RUL nodule 1: Adenocarcinoma
  - RUL nodule 2: nondiagnostic

- PET-CT:
  - 2 RUL nodules FDG-avid (SUV 9.1 & 8.8)
  - R paratracheal LN (station 4R) FDG-avid
  - No FDG-avidity elsewhere (including other nodules)

- MRI brain: no suspicious findings
- Good heart & lung function

Mrs. K.

- Review at Multidisciplinary Lung Cancer Clinic:
  - RUL adenocarcinoma
  - Stage IIIA (T3N2 - multiple nodules in same lobe) or Stage IV

- Plan:
  - Sample of suspicious lymph nodes
  - If positive for cancer → induction chemo/radiotherapy
Mrs. K.

• EBUS:
  – Right hilar lymph node with adenocarcinoma (N1)
  – Other mediastinal lymph nodes nondiagnostic

• Mediastinoscopy:
  – Multiple right-sided LNs with adenocarcinoma (N2)
  – No tumor in left-sided lymph nodes (not N3)

• Stage?:
  – IIIA (T3 N2 M0) – assumes left lung disease not related
  – IV (T3 N2 M1a) – assumes left nodules mets from right

Mrs. K.

• Underwent neoadjuvant chemo/radiotherapy

• Repeat chest CT after Chemo/Radiotherapy:
  – RUL nodules stable
  – Mediastinal LNs decreased in size
  – LLL GGO lesion smaller
  – LLL cavitory lesion smaller

• Reviewed at Multidisciplinary Lung Cancer Clinic
  – Suspect L-sided disease not related to R-sided cancer
  – Proceed to surgical management of R tumor(s)

• VATS right upper lobectomy & mediastinal LN dissection
Mrs. K.

- Postoperative course uneventful
  - Discharged home POD#5

- Pathology:
  - RUL nodule 1: 16mm adenoCa, <10% viable tumor
  - RUL nodule 2: 17mm adenoCa, pleural invasion, >10% viable tumor
  - No viable cancer in any of 10 lymph nodes
  - Molecular testing confirmed same mutation in lymph nodes from EBUS & mediastinoscopy as in RUL nodule 1, different from nodule 2.

- Concurrent Stage IIIA (T1bN2) AND Stage IB (T2aN0)
  - But NOT Stage IV

- Plan:
  - Meet with Med Onc to discuss further treatment
  - Ongoing surveillance for recurrence/ L-sided lesions

Mrs. K.

- Follow-up Imaging:
  - Decrease in left-sided cavitary lesion
  - Persistence of ground glass opacities without increase in size/density

- No need for additional chemo/radiation/surgery
Summary

- Utility of the multidisciplinary approach to lung cancer management
  - Review patients with suspicious findings
  - Review patients with new diagnosis of cancer
  - Review patients with recurrent cancers

- Determine plan for workup of staging
- Discuss management options
  - Patient with disease ranging from simple to complex
  - Able to treat patients who are “outside of the box”
- Discuss options for involvement in cancer trials
Thank you

CU Lung Cancer Multidisciplinary Clinic Team

Thoracic Oncology
Multidisciplinary Coordinator: Amanda Young, NP
Thoracic Surgeons: Robert Meguid, MD, MPH John Mitchell, MD Michael Weyant, MD
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Radiologists: Pater Sachs, MD Nicole Restauri, MD Thomas Suby-Long, MD Daniel Vargas, MD
Support Staff: Julie Bishop, MPH Shantel Ho Candice Tuthill