Integration of staging procedures

TNM Quiz

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Case 1

• 81-y-o man. Former smoker
• RLL pneumonia; persistent RLL density
• Blood-stained sputum
• Rales in RLL
• Chest x-rays and CT scan
• Bronchoscopy: not performed
3.6 cm in greatest dimension

Enlarged 4R
Needle biopsy: ADENOCARCINOMA
Morphology & IHC: Compatible with lung primary
What TNM, Stage?

a) T2b N0 M1
b) T2a N1 M1a
c) T2a N2 M1b
d) Tx N2 M1b
e) T1b N2 M1b

a) p IV
b) c IV
c) p IIIIB
d) c IIIIB
e) c IIIA
What TNM, Stage?

a) T2b N0 M1
b) T2a N1 M1a
c) T2a N2 M1b
d) Tx N2 M1b
e) T1b N2 M1b

a) p IV
b) c IV
c) p IIIB
d) c IIIB
e) c IIIA
Pathologic staging without tumour removal

• Biopsy has confirmed a pT category and there is microscopical confirmation of nodal disease at any level (pN1-3)
• There is microscopic confirmation of the highest N category (pN3)
• There is microscopical confirmation of pM1
Case 2

- 63-y-o man. Current smoker
- Shortness of breath, non-productive cough
- Diminished breath sounds, left lung
- Chest x-rays, CT scan
- Bronchoscopy: no endobronchial lesions; BAS: negative
Thoracentesis: NSCLC
IHC: Compatible with lung primary

No tumour mass
No enlarged lymph nodes
What TNM, Stage?

a) Tx Nx M1a
b) T4 Nx M0
c) T0 N0 M1a
d) T4 N0 M1b
e) T4 N0 M0

a) p IV
b) c IV
c) p IIIB
d) c IIIB
e) c IIIA
TX and T0

- **TX:** primary tumour cannot be assessed, or tumour proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy.

- **T0:** No evidence of primary tumour.

The tumour has been assessed: CXR, CT and FBS.
What TNM, Stage?

a) Tx Nx M1a  a) p IV
b) T4 Nx M0  b) c IV
c) T0 N0 M1a  c) p IIIB
d) T4 N0 M1b  d) c IIIB

e) T4 N0 M0  e) c IIIA
Case 3 (I)

- 65-y-o man. Former smoker
- Preop knee replacement
- Two lung nodules on chest x-ray
- CT & PET scans
RUL nodule
2.2 cm; SUVmax:3.6

LLL nodule
1.6 cm; SUVmax:1.8
Case 3 (2)

- Bronchoscopy:
  - Thickened mucosa in posterior segment of RUL. Biopsy: Carcinoma in situ
  - BAS: negative
  - BAL post seg RUL: Squamous cell Ca
  - BAL post seg LLL: negative
What TNM?

a) T1a N0 M0
b) T1b N0 M1a
c) T1b N0 M0
d) T1b(2) N0 M0
e) T1b N0 M0 & T1a N0 M0
Simultaneous tumours

- In simultaneous bilateral cancers of paired organs, each tumour should be classified independently.
- General rule #1: All cases should be confirmed microscopically. Any cases not so proved must be reported separately.
Simultaneous tumours

• In simultaneous bilateral cancers of paired organs, each tumour should be classified independently.

• General rule #1: All cases should be confirmed microscopically. Any cases not so proved must be reported separately.

The 2 lungs are considered to be a single organ for these purposes.
What TNM?

a) T1a N0 M0
b) T1b N0 M1a
c) T1b N0 M0
d) T1b(2) N0 M0
e) T1b N0 M0 & T1a N0 M0
Case 4 (1)

- 58-y-o man. Current smoker
- Right upper posterior chest pain
- Weight loss, head ache, instability
- Bad general condition, very thin, no neurological abnormality
- Chest x-rays and CT scan
What TNM?

a) T4 N2 M0
b) T3 N2 M0
c) T3c N2 M0
d) T3b N2 M0
e) T3a N2 M0
Proposal for testing
Depth of chest wall invasion

- **T3a**: limited to parietal pleura
- **T3b**: invasion involves the endothoracic fascia
- **T3c**: invasion involves the rib or soft tissue
What TNM?

a) T4 N2 M0
b) T3 N2 M0
c) T3c N2 M0
d) T3b N2 M0
e) T3a N2 M0
What TNM?

a) T4 N2 M1b
b) T4 N0 M1b
c) T3c N2 M1b
d) T3b N2 M1a
e) T3 N2 M1b
What TNM?

a) T4 N2 M1b
b) T4 N0 M1b
c) T3c N2 M1b
d) T3b N2 M1a
e) T3 N2 M1b
Case 4 (2)

- Bronchoscopy:
  - Tumour infiltration in lateral wall of middle third of the trachea. Biopsy: Adenocarcinoma
  - Complete obstruction of posterior segment of RUL bronchus. RML bronchus stenosis. Biopsy: Adenocarcinoma
What TNM, Stage?

a) T3 N2 M1b  a) c IIIA
b) T4 N2 M1b  b) p IV
c) T3c N2 M1b  c) p IIIB
 d) T4 N2 M1a  d) c IIIB
 e) T3a N2 M1  e) c IV
What TNM, Stage?

a) T3 N2 M1b  a) c IIIA
b) T4 N2 M1b  b) p IV
c) T3c N2 M1b  c) p IIIB
d) T4 N2 M1a  d) c IIIB
e) T3a N2 M1  e) c IV
Case 5

- 79-y-o man. Former smoker
- Ischemic heart disease
- Abdominal pain x 4 months
- Hepatomegaly
- Chest x-rays and CT scan
Liver FNA: small cell lung cancer
What TNM?

a) T3 N2 M1b
b) T2a N2 M1b
c) T2a N2a M1b
d) T2a N2b M1b
e) T2b N2 M1b
Proposal for testing
Telescopic ramifications of N descriptors

• **N1a**: invol of a single N1 zone
• **N1b**: invol of multiple N1 zones
• **N2a**: invol of single N2 zone
• **N2b**: invol of multiple N2 zones
What TNM?

a) T3 N2 M1b
b) T2a N2 M1b
c) T2a N2a M1b
d) T2a N2b M1b
e) T2b N2 M1b
Survival by number of zones

Rusch V et al.  
J TO 2009; 4: 568-577

<table>
<thead>
<tr>
<th>Zone</th>
<th>Deaths / N</th>
<th>1 Yr</th>
<th>5 Yrs</th>
<th>HR</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1a</td>
<td>446 / 798</td>
<td>86%</td>
<td>48%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1b</td>
<td>110 / 173</td>
<td>79%</td>
<td>35%</td>
<td>1.32</td>
<td>&lt;.0090</td>
</tr>
<tr>
<td>N2a</td>
<td>491 / 740</td>
<td>83%</td>
<td>34%</td>
<td>1.04</td>
<td>0.7137</td>
</tr>
<tr>
<td>N2b</td>
<td>220 / 281</td>
<td>71%</td>
<td>20%</td>
<td>1.65</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

*estimates of median survival, followed by 95% confidence intervals in parentheses

Single pN1 zone
Multiple pN1 zones
Single pN2 zone
Multiple pN2 zones
The IASLC lymph node map
Case 6

- 73-y-o man. Former smoker
- Oppressive sensation on chest
- Weight loss
- Painful hepatomegaly
- Chest x-rays and CT scan
What TNM?

a) T3 N2 M1b
b) T2a N2 M1b
c) T2b N2 M1b
d) T2b N2 M1b(2)
e) T2a N2 M1a
Proposal for testing Number and sites of M1

- Clinicians, oncologists and surgeons are encouraged to fully document the extent of disease in M1b cases, collecting data on all of the sites of (suspected) metastatic disease and whether such organs contain single or multiple deposits
What TNM?

a) T3 N2 M1b
b) T2a N2 M1b
c) T2b N2 M1b
(d) T2b N2 M1b(2)
e) T2a N2 M1a
Case 7 (1)

- 61-y-o woman. Current smoker
- Common cold & chest discomfort
- Negative physical examination
- Chest x-rays and CT & PET scans
9.3 cm, cranio-caudal
Case 7 (2)

- Bronchoscopy:
  - mass in posterior segment of RUL bronchus
  - TBNA subcarinal LN: squamous cell carcinoma
What TNM?

a) T2b N2 M0
b) T3 N2(C2) M0
c) T3 N2(C3) M0
d) T3(C2) N2(C2) M0(C2)
e) T4 N2 M0
Certainty factor

- **C1**: standard diagnostic means
- **C2**: special diagnostic means
- **C3**: surgical exploration
- **C4**: definitive surgery and pathological study
- **C5**: autopsy
What TNM?

a) T2b N2 M0
b) T3 N2(C2) M0
c) T3 N2(C3) M0
d) T3(C2) N2(C2) M0(C2)
e) T4 N2 M0
Case 7

- Mediastinoscopy:
  - 4R: positive
  - 4L: negative
  - 7: not biopsied

- Pathologic diagnosis: large cell neuroendocrine carcinoma
What TNM?

a) T2b N2 M0
b) T3 N2(C2) M0
c) T2 N2(C3) M0
d) T3(C2) N2(C3) M0(C2)
e) T4 N2 M0
What TNM?

a) T2b N2 M0
b) T3 N2(C2) M0
c) T2 N2(C3) M0
d) T3(C2) N2(C3) M0(C2)
e) T4 N2 M0
Case 7 (3)

- Induction chemoradiation:
  - Cisplatinum & vinorelbine
  - 66 Gy
Mediastinal or lung window?

- One should perform the measurement on the “window” settings that in your institution give the most accurate assessment of tumour size. A diagnostic radiologist would be able to indicate which is the “window” giving the most accurate evaluation in your institution.
No enlarged mediastinal lymph nodes
What TNM?

a) cT2b(C2) N0(C2) M0(C2)
b) ycT2a(C2) N0(C2) M0(C2)
c) ycT3(C2) N2(C2) M0(C2)
d) ycT2b(C2) N0(C2) M0(C2)
e) cT2b(C2) N2(C2) M0(C2)
What TNM?

a) cT2b(C2) N0(C2) M0(C2)
b) ycT2a(C2) N0(C2) M0(C2)
c) ycT3(C2) N2(C2) M0(C2)
d) ycT2b(C2) N0(C2) M0(C2)
e) cT2b(C2) N2(C2) M0(C2)
Case 7 (4)

• Remediastinoscopy:
  – 4R: negative
  – 4L: negative
  – 7: negative

• Pathologic diagnosis: all negative
Case 7 (5)

• Right thoracotomy:
  – RU & M lobectomies
  – Systematic nodal dissection

• Pathologic diagnosis:
  – 3 cm tumour: no viable malignant cells
  – All nodes negative
What TNM?

a) ypT2b N0 M0
b) ypT0(C4) N0(C4) M0(C2)
c) ypT1b N0 M0
d) ypT0 N0 M0
e) ypT2b N2 M0
What TNM?

a) ypT2b N0 M0
b) ypT0(C4) N0(C4) M0(C2)
c) ypT1b N0 M0
d) ypT0 N0 M0
e) ypT2b N2 M0
TNM is dynamic

- **c TNM**: clinical, pretreatment
- **p TNM**: pathological, post-surgical
- **y (c) (p) TNM**: during or following initial multidisciplinary therapy
- **r TNM**: recurrent tumours
- **a TNM**: first determined at autopsy
7th Edition of the TNM
Editorial Rx Press, Orange Park, FL, USA, 2009

Staging Manual in Thoracic Oncology

Peter Goldstraw, FRCS
Executive Editor

Print

CD

Staging Handbook in Thoracic Oncology
7th edition of the TNM