Surgery for oligometastatic lung cancer and liver or adrenal metastases

P. Van Schil, MD, PhD
Department of Thoracic and Vascular Surgery
Antwerp University Hospital, Belgium
Disclosure slide
Paul E. Van Schil

• no disclosures
• no conflicts of interest
Surgery for oligometastatic lung cancer and liver or adrenal metastases

- General overview
- Contralateral pulmonary nodules
- Extrathoracic single or multiple metastases
  - M1 – extrathoracic metastases
  - M1 – liver
  - M1 – adrenal
- Conclusion
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➢ General overview

➢ Contralateral pulmonary nodules

➢ Extrathoracic single or multiple metastases
  ▪ M1 – extrathoracic metastases
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➢ Conclusion
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NSCLC metastatic disease

- generally poor prognosis
- surgery rarely indicated except some subgroups
- no controlled randomised trials
- retrospective studies: selection bias
- long-term survivors: complete resection 1ary + metastatic site(s)
Definition oligometastases

- Oxford dictionary: oligo- = having few, containing a relatively small number of units
- Intermediate state: better prognosis than diffuse metastatic disease?
- < 5 lesions occurring in no more than 2 or 3 different organs
- 3 distinct entities:
  - limited n of mets at diagnosis
  - oligoprogressive disease after cytoreductive therapy
  - oligorecurrent disease after definite locoregional therapy
Surgery for oligometastatic lung cancer

- integrated PET-CT: detection occult metastases

7.5% early stage – 24% advanced stage

Surgery for oligometastatic lung cancer

Case 52-year-old ♂: bone metastasis

- 2006: NSCLC RUL + bone met L femur
- stabilisation + RT L leg + 6 cycles CT - RT RUL

X-ray 300407
Case: bone metastasis
Case: bone metastasis

chest CT 0807: partial response, stable disease
Case: bone metastasis

chest CT 1207: progressive disease (locally)
Case: bone metastasis

- PET: only RUL +
- 210108 salvage surgery: lobectomy RUL
- pT1N1 R0
- postop. complication: wound infection Staph. aureus
Surgery for oligometastatic lung cancer

Prospective phase II study

  - NSCLC + solitary, synchronous metastasis
  - induction chemotherapy: 3x MVP (mitomycin, vinblastine, cisplatin)
  - resection all disease sites + 2 postop. cycles VP
  - 23 pts enrolled (12 ♂, 11 ♀) median age 55 y
  - mediastinoscopy 22 pts + N2 in 12 (54.5%)

Downey RJ et al. Lung Cancer 2002; 38:193-7
Surgery for oligometastatic lung cancer

**Prospective phase II study**

- only 12 pts completed 3 cycles induction MVP
- resection 1ary lung cancer
  - 14/23 pts - 61%
  - 6 N0  1 N1  7 N2 = 50%
  - 9 pts no lung resection: 5 brain recurrence 4 PD during chemotherapy

Downey RJ et al. Lung Cancer 2002; 38:193-7
Surgery for oligometastatic lung cancer

**Prospective phase II study**

- 20 pts definitive treatment M1 site
  - adrenalectomy 1
  - splenectomy 1
  - partial colectomy 1
  - segmental bone resection 2
  - lung resection 1
  - *stereotactic radiotherapy* 1
  - craniotomy 13
  - *no resection M1 – PD* 3

Downey RJ et al. Lung Cancer 2002; 38:193-7
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**Prospective phase II study**

- 10 pts complete resection 1ary + M1 site
  - 8 had 3 cycles of preop. MVP
  - 6 had 2 cycles of postop. VP
- overall MST all pts 11 mos
- at 5 years: only 2/23 pts alive NED
- last FU 3 pts alive
  - 1 disease-free at 104 mos
  - 2 alive with disease at 31 and 77 mos

*Downey RJ et al. Lung Cancer 2002; 38:193-7*
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**Prospective phase II study - conclusions**

- n of pts who qualified for this approach ↓
- induction CT + surgery + adjuvant CT poorly tolerated
  
  *but: MVP toxic!*

- ↓ overall and disease-free survival

- **retrospective analysis same data**
  
  - 10 pts complete resection 1ary + M1 site "shrinking denominator"
  - 3 pts alive at last FU: 30%
  - 2 pts true 5-year survivors: 20%

  Downey RJ et al. Lung Cancer 2002; 38:193-7
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Contralateral nodules

- IASLC database:
  c + p stage 5,592 selected T4M0 and M1 analysed
  best stage (p stage if available, otherwise c): 1,004 pts

- pM1 contralateral nodules n=369, primarily c stage
  MST 10 mos
  5-year survival 3%
  \( \approx \) pleural dissemination
  \( \neq \) distant mets
  \( p < .0001 \)

Contralateral nodules

1. T4 M0 Any N: Deaths/N = 332/399, Median in Months = 13
2. Pleural Dissemination: Deaths/N = 462/488, Median in Months = 8
3. Contralateral Lung Nodules: Deaths/N = 350/362, Median in Months = 10
4. M1 Distant: Deaths/N = 4149/4343, Median in Months = 6

15-18 April 2015, Geneva, Switzerland
Contralateral nodules

Best stage

Contralateral nodules

M1a
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**Distant extrathoracic metastases**

- IASLC database: 4,350 pts distant extrathoracic metastases

<table>
<thead>
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<th>Reported sites</th>
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<tr>
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<tr>
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<td>adrenal</td>
<td>6</td>
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<td>skin</td>
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<tr>
<td>other single sites</td>
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</tr>
</tbody>
</table>


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Distant metastases

1. T4 M0 Any N  
   Deaths / N: 919 / 1106  
   Median in Months: 13

2. Pleural Dissemination  
   Deaths / N: 704 / 771  
   Median in Months: 10

3. Contralateral Lung Nodules  
   Deaths / N: 357 / 369  
   Median in Months: 10

4. M1 Distant  
   Deaths / N: 4155 / 4350  
   Median in Months: 6

best stage
Distant extrathoracic metastases

- poor prognosis
  MST 6 mos
  1-year survival 22%

  *single* distant metastasis
  MST 6 mos
  1-year survival 20%

  *multiple*
  5 mos
  23%

  \( p = .006 \)

- no difference single-site locations MST 6 mos
  exception brain MST 5 mos

- not possible to evaluate prognostic differences between
  single ↔ multiple brain mets
  single ↔ multiple sites in any extrathoracic organ


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Liver metastases

- liver common site for mets of gastrointestinal, lung and breast cancer
- 70-90% of liver metastases unresectable
- other ablative treatment options
  SART, RFA, transarterial chemoembolisation, percutaneous ethanol injection
- most experience colorectal cancer ± lung mets; 1ary NSCLC: limited data
- SART local control rates 60-90% and OS 30-83% after 2 years
  best for lesions ≤ 3 cm, oligometastases n ≤ 3
- SART well-tolerated and effective for unresectable lesions
- more prospective data needed

Scorsetti M. J Gastrointest Oncol 2014; 5:190-97
Senan S. IASLC Multidisciplinary Approach to Thoracic Oncology Chapter37 pp. 487-490
Adrenal metastases

all distant extrathoracic metastases M1 → M1b


♂ 48-year-old
07/12 NSCLC M1b, CRT
02/14 PD R adrenal gland → adrenalectomy
Adrenal metastases

- 70-year-old
- 08/06 lobectomy LLL, stage IB, adjuvant chemotherapy
- 06/14 solitary adrenal metastasis → L adrenalectomy
Adrenal metastases

- highly selected patients: resection lung cancer + adrenal met
- histological diagnosis to be obtained
- invasive mediastinal staging, extrathoracic imaging (CT-PET)
- contra-indications: N2,3 other mets
- adrenalectomy: laparoscopy safe, effective, advantageous
  
  Ariyan C. Adv Surg 2007; 41:133-53

- 23 pts isolated adrenal metastasis
  
  synchronous 6 metachronous 17
  5-year survival 23.3%
  ↑ prognosis: DFI > 6 mos 5-year survival 38%
  ↓ DFI < 6 mos † < 2 years


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Adrenal metastases

- systematic review
- 10 publications 114 patients
  - 42% synchronous  58% metachronous  median DFI 12 mos
- synchronous: younger
- complications adrenalectomy infrequent
- MST  synchronous 12 mos metachronous 31 mos  \( p=0.02 \)
- 5-year survival synchronous 26%  metachronous 25%
- conclusion synchronous shorter MST
  
  \textit{but}: durable long-term survival in both groups

Tanvetyanon T. J Clin Oncol 2008; 26:1142-7
Isolated adrenal metastasis
ACCP guidelines

• planned curative-intent surgical resection: invasive mediastinal staging + extrathoracic imaging (head CT/MRI + PET) recommended

• synchronous met with resectable 1ary NSCLC N0,1 resection 1ary tumour + adrenal met recommended

• metachronous adrenal met: resection recommended if 1ary lung cancer was completely resected

• after curative resection adrenal met: adjuvant chemotherapy

Kozower BD. Special treatment issues in NSCLC. ACCP guidelines. Chest 2013; 143(5) suppl e369S – e399S

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Conclusions

• metastatic NSCLC: poor prognosis
  surgery rarely indicated
• ‘oligomet’: complete resection 1ary tumor + mets
• combination: surgery, SART, chemotherapy, targeted therapies

NCCN guidelines version 5.2015

definitive local therapy to isolated or limited metastatic sites (oligometastases)
(including but not limited to brain, lung, and adrenal gland) achieves prolonged
survival in a small proportion of well-selected patients with good performance
status who have also received radical therapy to the intrathoracic disease