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Stereotactic ablative body radiotherapy (SABR) with flattening filter free (FFF) mode for NSCLC oligometastatic patients: feasibility and outcomes

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Organisers

IASLC International Association for the Study of Lung Cancer

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SABR for Lung Metastases in NSCLC

Background

- Oligometastatic patients: metastases are limited in site and number
- Different types of local therapies have been used for the treatment of limited metastases, mostly in the lung and liver
- Data on the use of SABR are emerging and the early results on local control are promising

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Background

SABR allows the delivery of **ablative doses** with highly conformal techniques, maximum **healthy tissue sparing** and improvement **time efficiency for delivery**

Patients candidates for SABR

- limited number of lung metastases (five or fewer)
- diameter of 5 cm or less
- adequate pulmonary function
- potentially stable extrathoracic disease

*The biggest challenge in the treatment of oligometastatic disease is to identify the patients who will benefit from **local aggressive therapy***

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Background

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Lung Cancer

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Is there an oligometastatic state in non-small cell lung cancer? A systematic review of the literature

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- **definitive treatment** of PT
- **lack of intra-thoracic N** metastases
- disease free interval > **6-12 months**

→ Long-term survival improvment

SABR for Lung Metastases in NSCLC

Aim and Patients

PURPOSE

To evaluate preliminary clinical results and lung toxicity

METHODS AND MATERIALS:

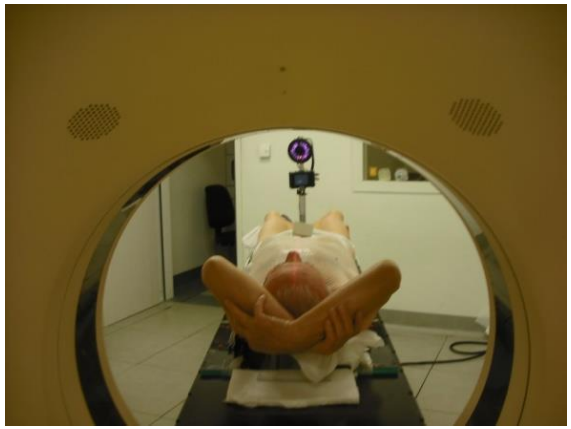
- NSCLC patients with lung metastases treated with SABR
- Oligometastatic disease
- Up to 4 lesions
- Adequate pulmonary function
- Discussion in a multidisciplinary team
- Definitive treatment of primary lung tumor

SABR for Lung Metastases in NSCLC

Procedure and Dose Prescription

PROCEDURE

- Thermoplastic masks for the thoracic region
- CT scan from the mandible to the L3 with 3 mm slice thickness in free breathing mode
- 4D-CT scan to evaluate organ motion
- Personalized margins in relation to the respiratory motion
- CBCT every day



DOSE PRESCRIPTION

Peripheral lesions ≤ 2 cm	60 Gy/20 Gy/3 days
Peripheral lesions	48 Gy/12 Gy/4 days
Central lesions	60 Gy/7.5 Gy/8 days

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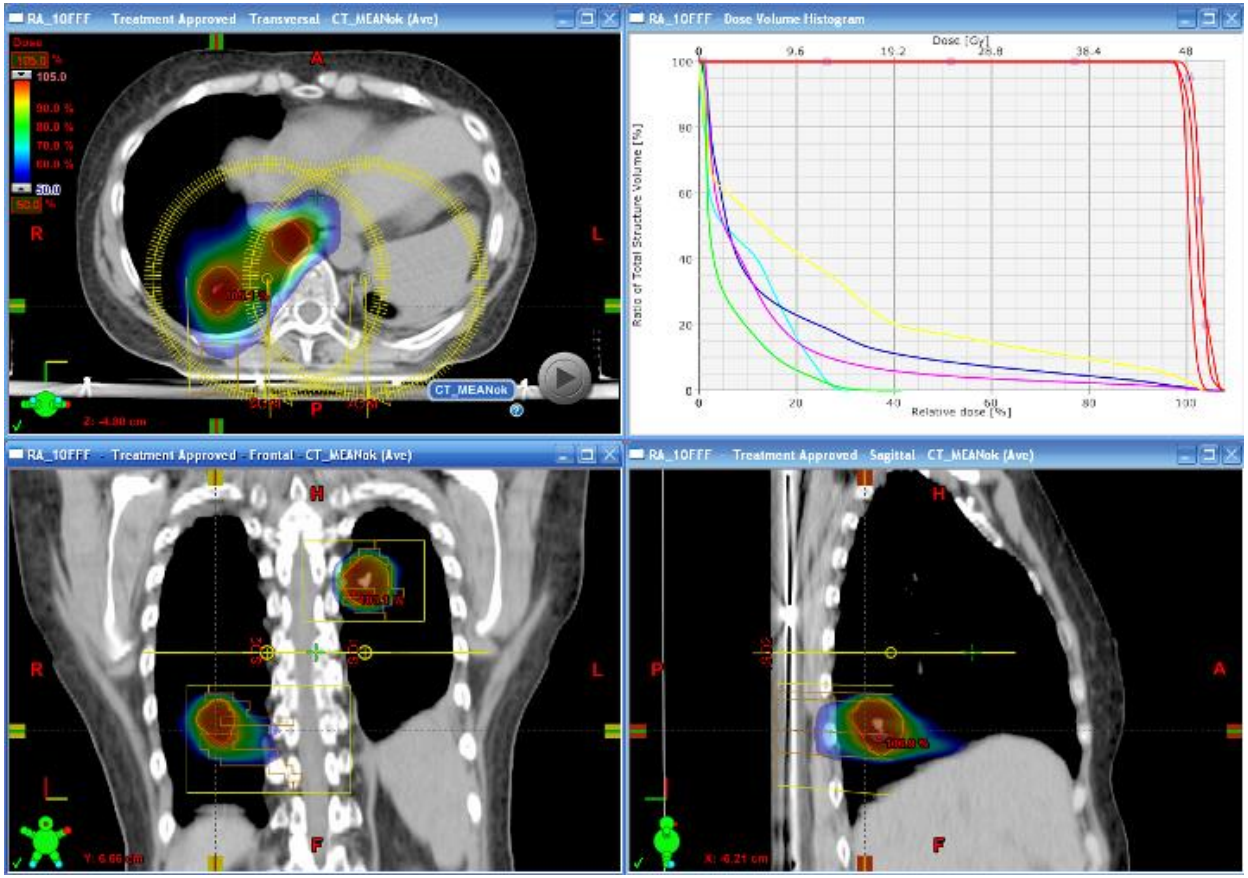
Treatment



Heart:
mean dose 2.6 Gy

Lung: mean dose
7.5 Gy (left)
5.7 Gy (right)

Spinal Cord:
max dose 13.0 Gy

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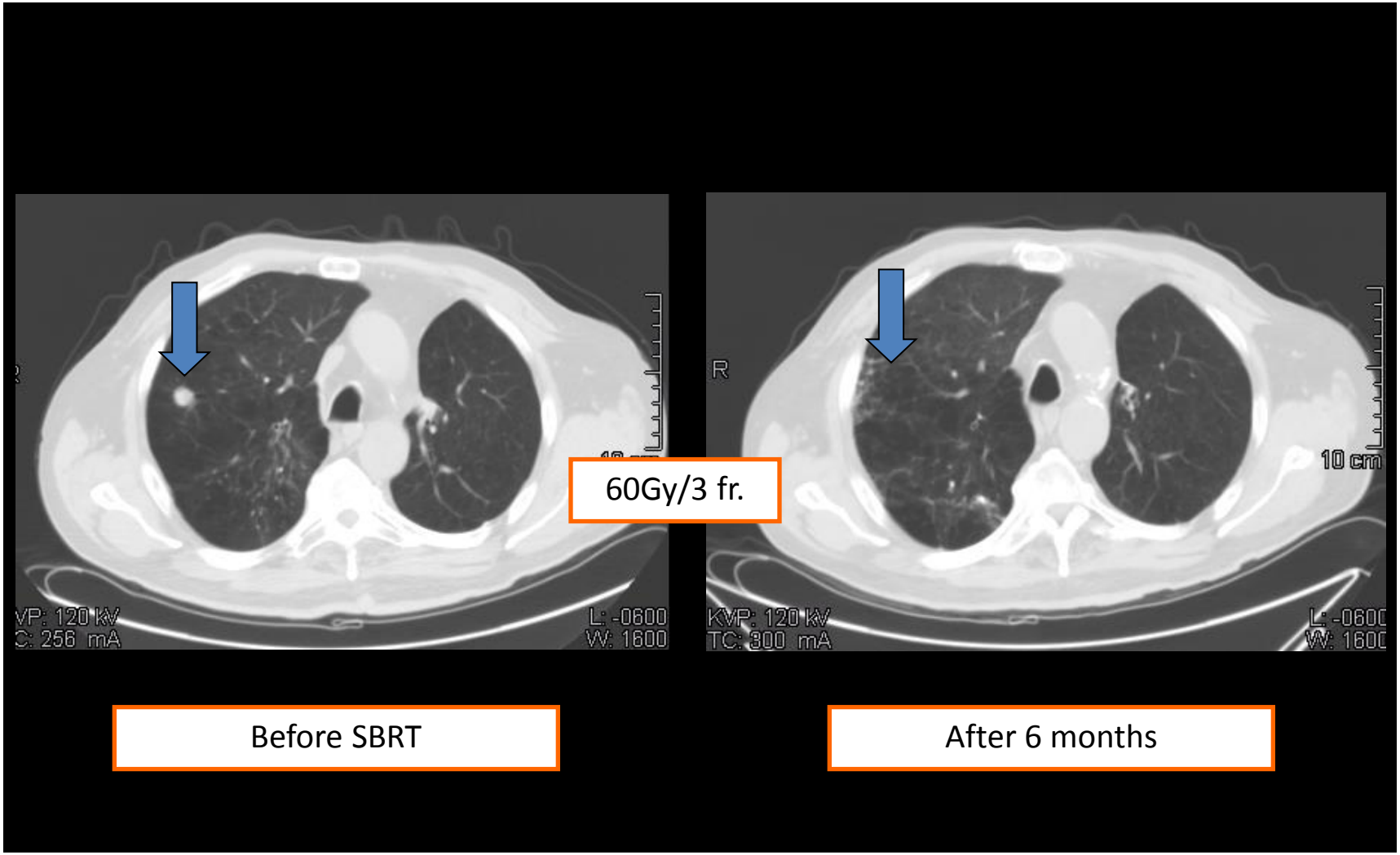
Results

- 36 evaluable patients (58 lung lesions)
- Median follow up 24 months (6-40 months)
- Median age 68 years (range 50 – 85 years)
- No pulmonary toxicity greater than GRADE 2
- No CHEST PAIN or RIB FRACTURE

Response (RECIST vs 1.1)	
CR	79.3%
PR	10.4%
SD	0%
PD (LP+DP)	10.4%


60Gy/3 fr.
Before SBRT
After 6 months

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Results

- Factors influencing OS:

✓ Long term metastatic disease free interval
✓ Only lung metastases even if multiple

✓ Stable disease at the first control
✓ Rapid progression of disease

SABR for Lung Metastases in NSCLC

Conclusion

- SABR is feasible, safe and effective local treatment option for patients with lung metastases
- VMAT technique improves target coverage minimizing higher dose to normal tissue
- Good radiological response and Minimal toxicity
- A longer follow-up is needed to assess the effective incidence on clinical outcome
- Discussion in multidisciplinary team to select patients with better prognoses

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Thanks for your attention

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