Stereotactic Body Radiotherapy in the treatment of lung metastasis in patients with stage IV Non-Small-Cell-Lung cancer patients

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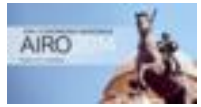
Background

~40% of newly diagnosed NSCLC present with metastatic disease

Stage IV median survival 8-11 months

~10% of Stage IV NSCLC present with ≤5 mts

<u>oligometastatic disease</u>



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

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The preponderance of evidence suggests that in select oligometastatic patients, locally ablative therapies given with the intent of eradicating all sites of known metastatic disease could result in long-term survival, or even cure

No standard definition!!

Background

- The majority of the studies include patients with brain metastases

- Only few studies in the literature on extracranial oligometastatic NSCLC. These patients are usually treated with chemotherapy

- In the last 2 years some retr… showed a benefit in irradiating olig… ts.

Inhomogenous data

Background

- The potential role of local ablative radiotherapy has been investigated

Rusthoven K. E., et al. (2009)
Griffioena H.M.J.G, et al. (2013)
Collaud S., et al. (2012)
Yano T., et al. (2013)

- 1y- and 2y-OS in oligometastatic NSCLC patients, treated with SBRT is 70% and 51% with median OS of 26 months

Ashworth. A. B., et al. (2014)

End-points

Retrospective analysis: selected series of oligometastatic /oligorecurrent NSCLC patients with lung metastasis treated with SBRT to all active sites

Response
Local control
Time to progression
Survival
Toxicity rate

Materials and Methods

Patient's charateristics	
Mean Age	66 (52-85)
Sex	
Male	15 (68)
Female	7 (3)
Histology	
Adenocarcinoma	14 (63.7)
Squamocellular	7 (31.8)
Other	1 (4.5)
Sites of disease	
1	18 (81.8)
2-4	4 (18.2)
Site	
Central	6 (20.5)
Peripheral	23 (79.5)

29 lung metastases in 22 patients with NSCLC

Inclusion criteria:

- Controlled primary tumor with complete response or stable disease after surgery/ radiotherapy/combined therapy
- ≤ 4 synchronous or metachronous lung metastasis at the time of treatment
- No other active sites of distant metastasis.

Materials and Methods

Treatment's charateristics	
4DCT + IGRT	
Single fraction	22 (81.5)
Multiple fraction	5 (18.5)

29 lung metastases in 22 patients with NSCLC

Fractionation	
23 Gy / 1fr Multiple lesions	12 (41.3)
30 Gy / 1 fr Peripheral or small tumors (< 30cc)	10 (34.4)
45 Gy / 3 fr Central or big tumors (>30 cc)	7 (24.3)

Mean PTV volume: 10 cc (3.4 – 35.2 cc)

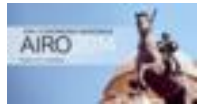
Results – Response

Response in 29 metastases:

- Complete response (CR) 21%
- Partial response (PR) 69%
- Stable disease (SD) 10%

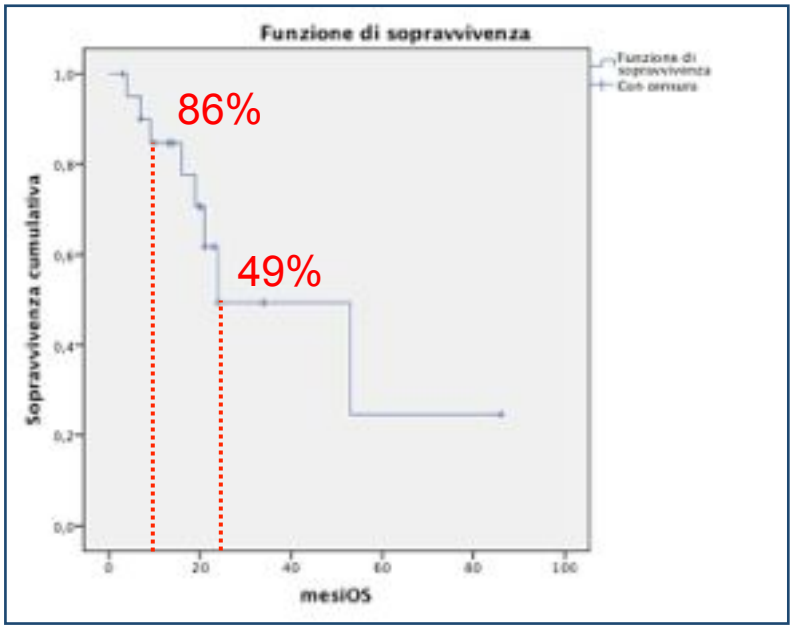
- Complete metabolic response 91%
- Partial metabolic response 9%.

Local control was 93% at 1 year and 64% at 2 years.

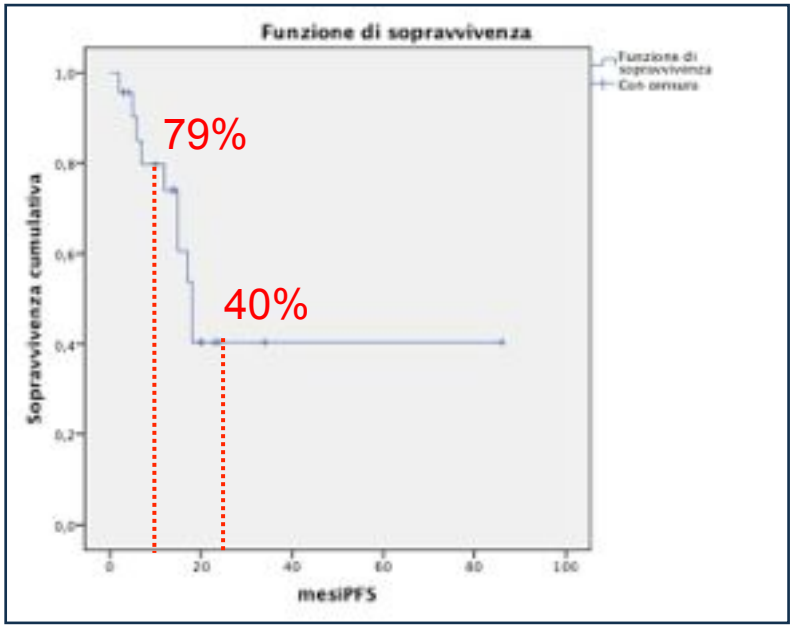


Results – Survival

Median OS: 24 mo



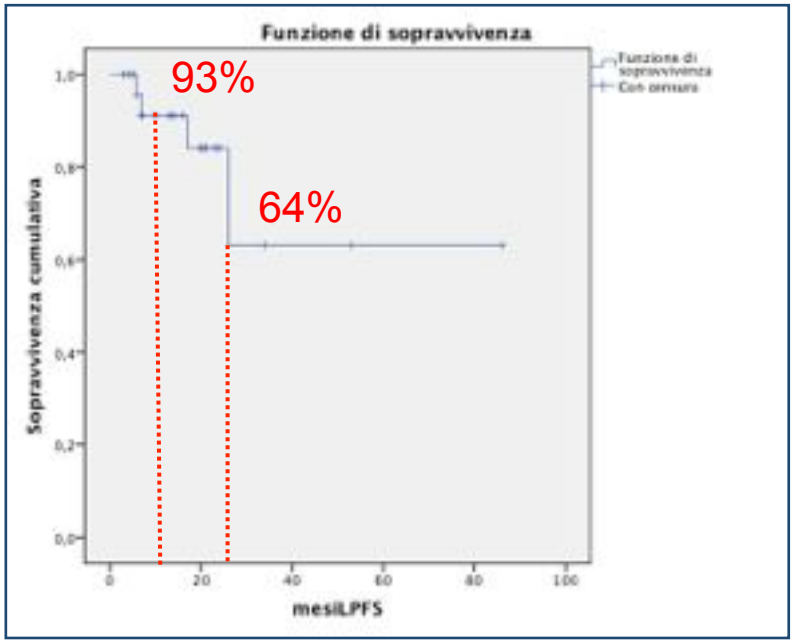
Median PFS: 18 mo

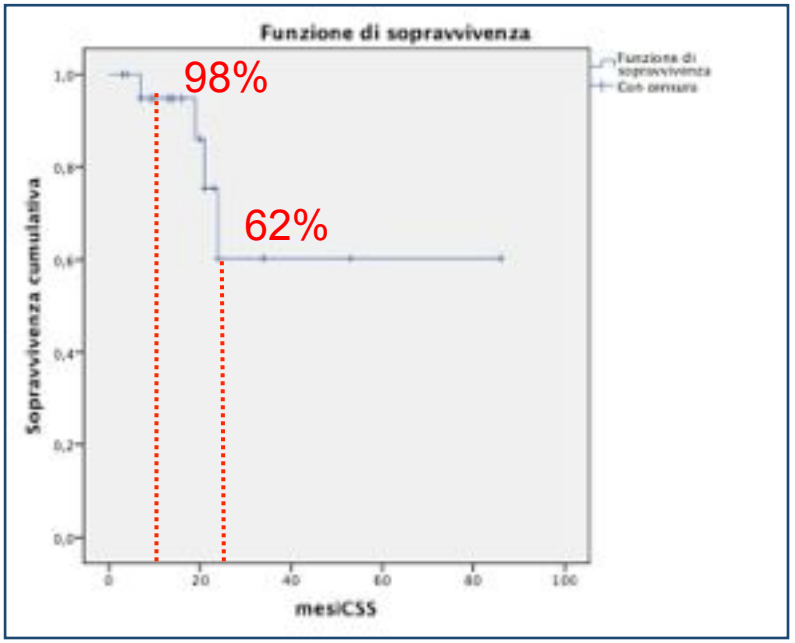


Results

Median LPFS: NR

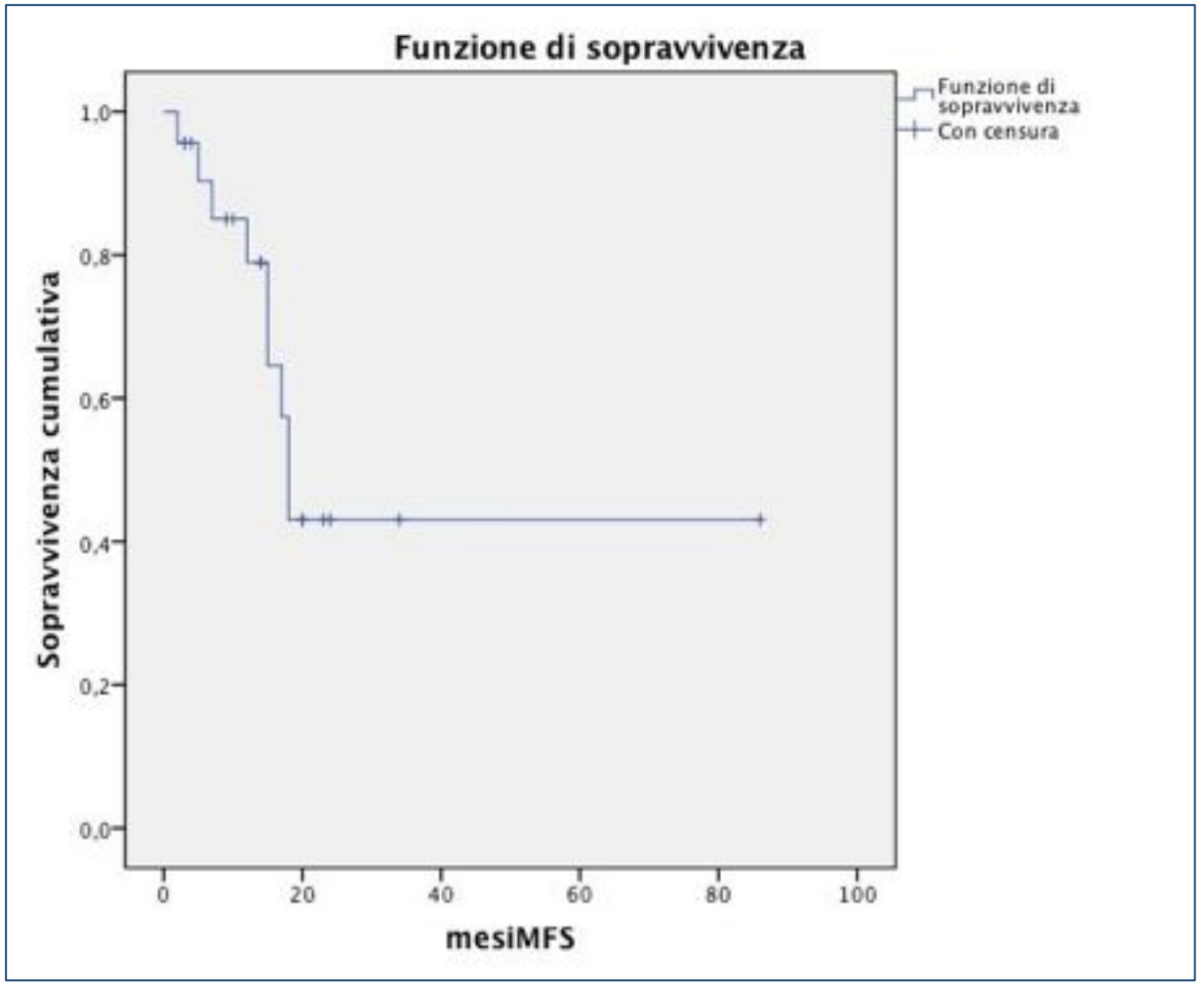
Cancer Specific Survival: NR





Results

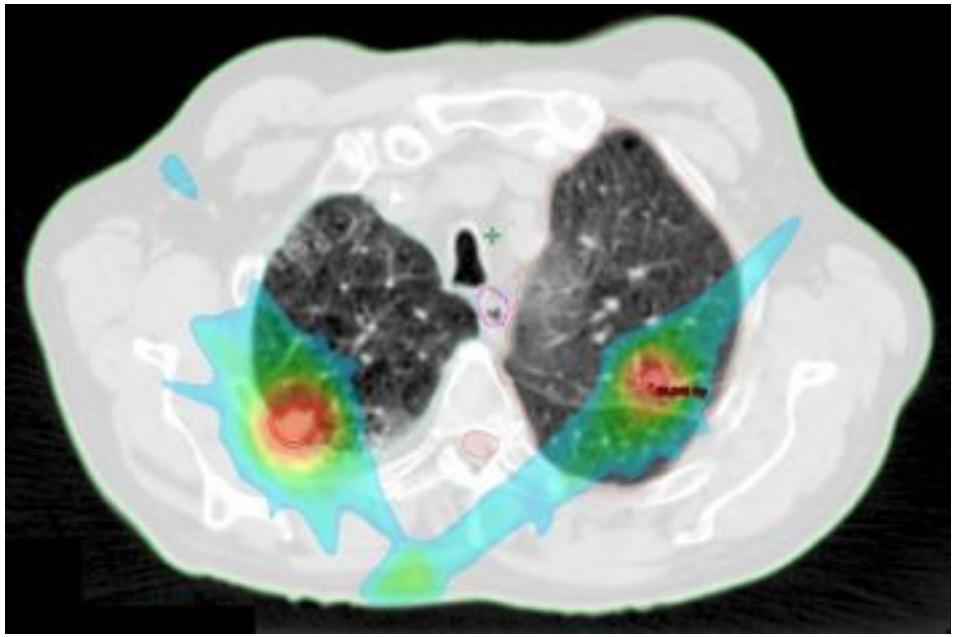
Median MFS: 18 mo

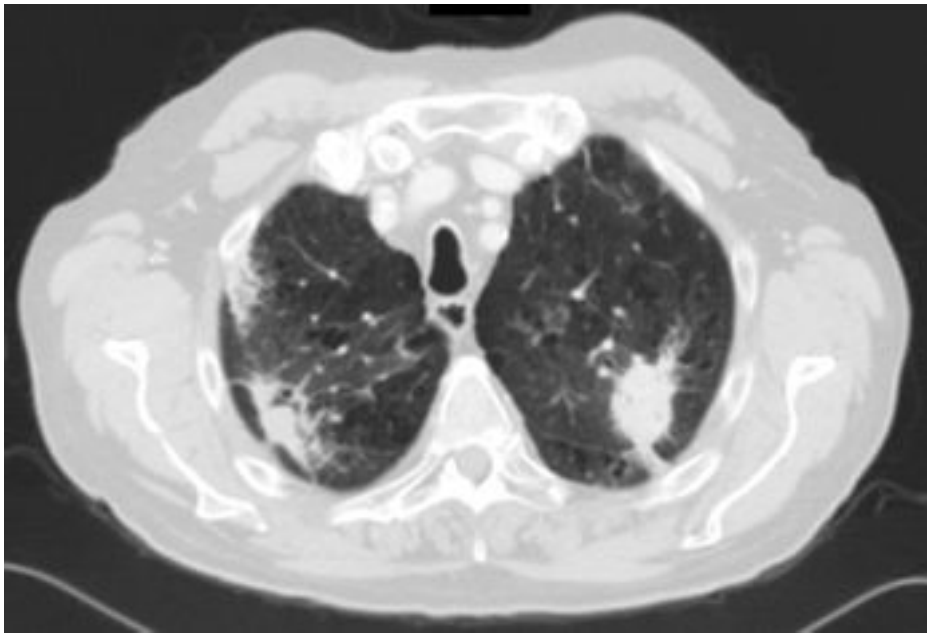


Results – Toxicity

2 pts (9%) developed G2 pneumonitis

11 pts (50%) developed G1-2 late toxicity





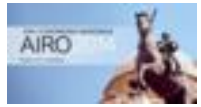
Fibrosis after 1 year

Limits of this study?!

Small number of patients

Retrospecive study

Need of a longer follow-up



Conclusions

Long term results rely on an exact and shared definition of oligometastatic disease

Local ablative treatment is a feasible option in this well-selected setting of disease

High rate of local control, well tolerated

Need for larger series of patients and phase III randomized trial

Thanks for your attention!