Associazione Italiana Radioterapia e Oncologia clinica

Società Italiana di Radiobiologia

SELECTION CRITERIA FOR STEREOTACTIC BODY RADIOTHERAPY OF SPINE METASTASES. DETERMINANTS OF RADIORESISTANCE AND PROGRESSION FREE SURVIVAL

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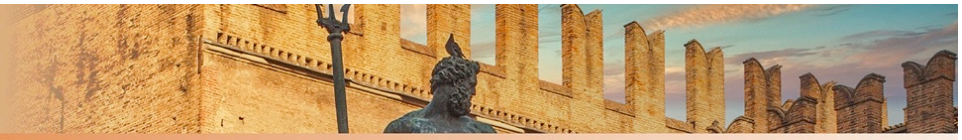

DICHIARAZIONE

Relatore: MICHELE AQUILANO

- Posizione di dipendente in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Consulenza ad aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
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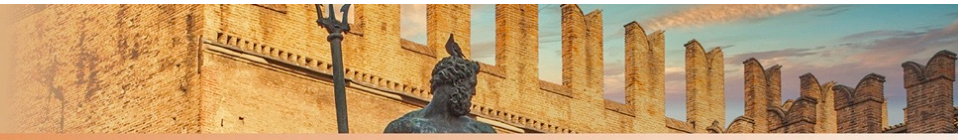


BACKGROUND

- Stereotactic Body Radiotherapy (SBRT) is widely used for treatment of uncomplicated spine metastases to palliate symptoms and prolong disease control

- Currently six randomized trials comparing conventional radiotherapy with SBRT for patients with spinal and non-spinal bone metastases have been published*

- However, criteria for patient selection are not available.

Berwouts D et al Radiother Oncol; Nguyen Q-N et al. JAMA Oncol 2019; Pielkenrood BJ et al. International Journal of Radiation Oncology Biology Physics 2020; Ryu S et al. International Journal of Radiation Oncology, Biology, Physics 2019; Sahgal A et al. The Lancet Oncology 2021; Sprave T et al. Radiother Oncol 2018.

AIM OF STUDY

- To identify determinants of local failure and disease progression-free interval in patients treated with SBRT to spinal metastases

MATERIAL AND METHODS

- Data from a cohort of consecutive patients treated with Cyberknife-based spine SBRT treated were retrospectively collected

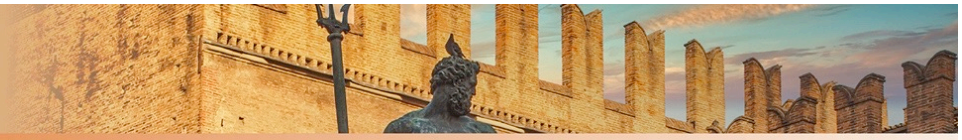
- Retrospective series considered patients treated between January 2019 and March 2020

- Dose was expressed as Biological Effective Dose for $\alpha/\beta=10$ (BED10)

MATERIAL AND METHODS

- Kaplan-Meyer method was used to calculate Local Control (LC) and Disease Progression Free Survival (DPFS) from date of SBRT to event

- Univariate (UVA) and Multivariate analysis (MVA) were performed using log-rank and Cox model, respectively



RESULTS

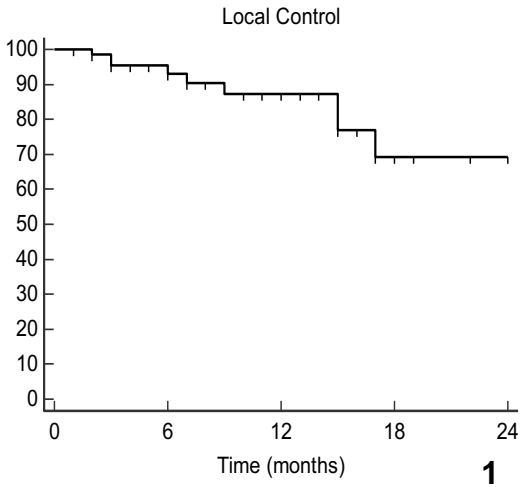
- Sixty-two patients accounting for 70 spinal metastases were included. Median age was 66 years
- Disease was metastatic at diagnosis in 21 patients (34%), an active primary tumor was present in 17 patients (27%)
- The most represented primary malignancies were prostate (n=28, 40%) and breast (n=21, 30%)

RESULTS

- Dose regimens consisted of 25-30 Gy in 5 fractions and 21-30 Gy in 3 fractions in respectively 61 (87%) and 9 (13%) cases, resulting in a median BED of 43.2 (range 37.5-60) Gy10
- Concurrent systemic therapy was administered in 30 cases (43%)

RESULTS

- After a median follow up of 10 months, 9 local relapses and 40 distant progressions were observed
- One year LC was 87% (Fig.1): non-prostate primary tumor (p=0.003, Fig.2) and concurrent chemotherapy (p=0.006, Fig.3) were associated to poorer LC at UVA, and an independent correlation was confirmed at MVA (respectively p=0.017 and p=0.024)



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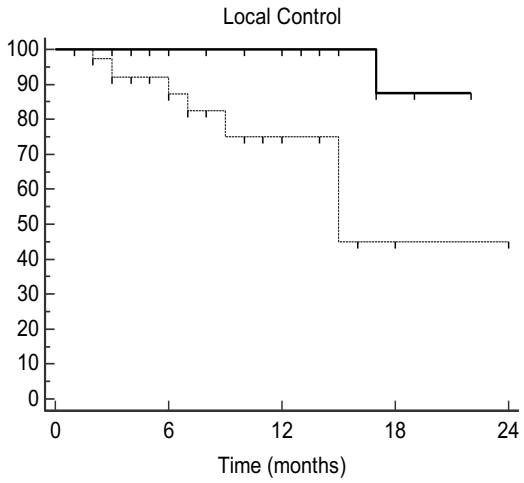

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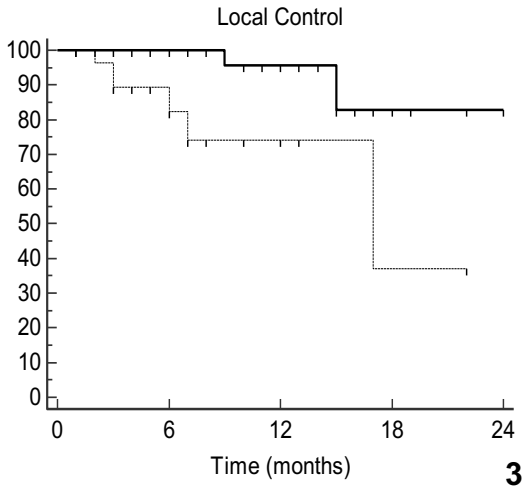

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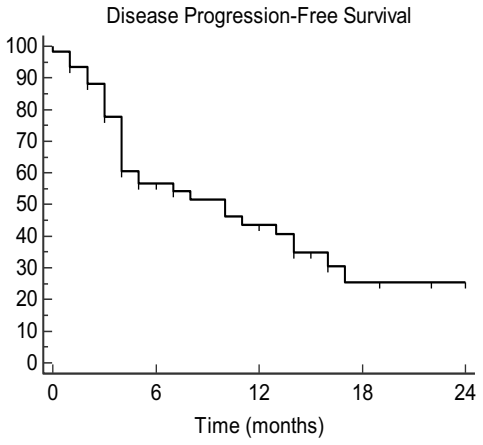
RESULTS

- One-year DPFS was 43% (Fig.4) UVA showed a correlation between impaired DPFS and metastatic dissemination at diagnosis (p=0.02) and non-prostate primary tumor (p=0.009), although only an active primary tumor site was independently associated to DPFS at MVA (p=0.007, Fig.5)
- Only G2 acute pain or nausea in respectively 5 (7%) and 4 (6%) cases. No late toxicity, no vertebral fracture



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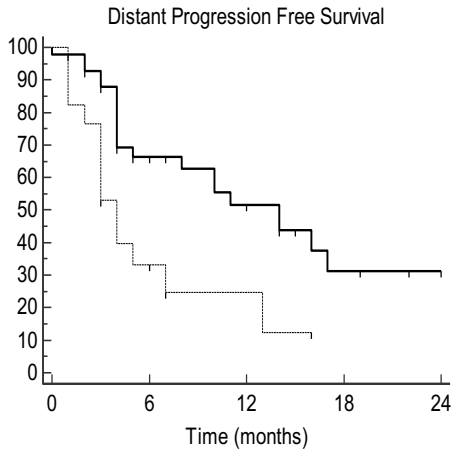

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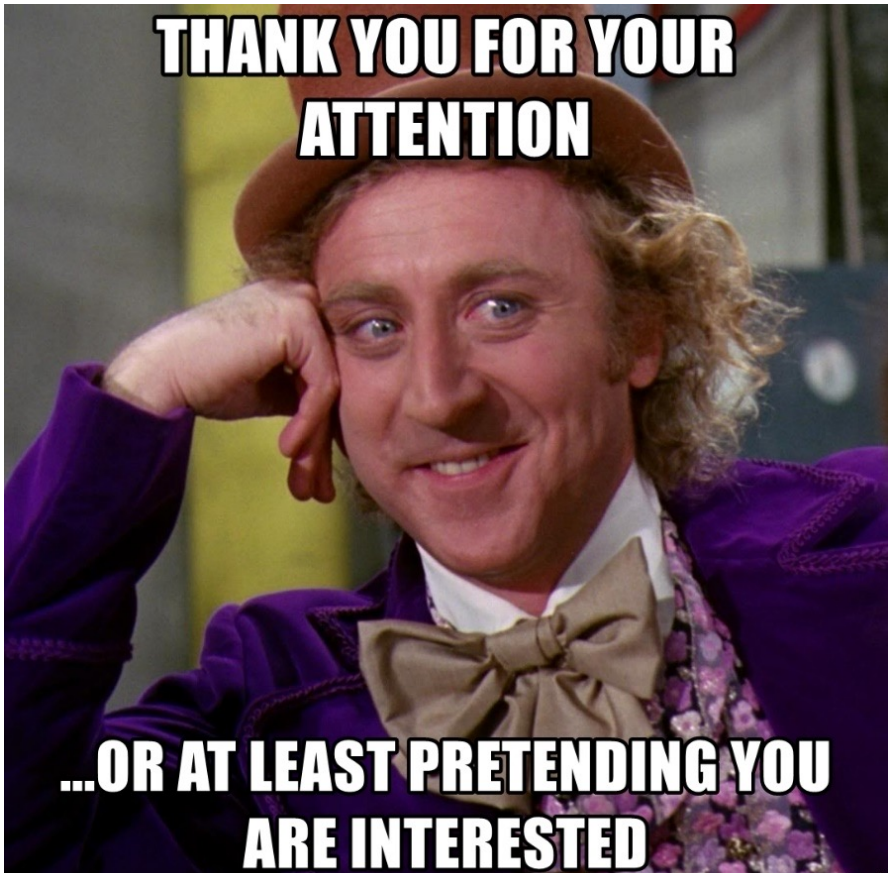
CONCLUSIONS

- Spine SBRT results in high LC rates and durable disease progression-free survival with low incidence of mild toxicity
- Clinical nomograms based on patient-related characteristics may help to select candidates for this approach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