Factors associated with short survival after whole brain radiotherapy for brain metastases in patients with non-small cell lung cancer

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Background

- Brain metastases (BM) occur in about 30 % of non-small cell lung cancer (NSCLC) patients
- Radiotherapy (RT) is the most applied intracranial treatment, either whole brain radiotherapy (WBRT) or stereotactic radiotherapy (SRT)
- The benefit of WBRT in lung cancer BM treatment is debated
- There is a concern that many patients receive WBRT with short survival after treatment, risking adverse side-effects and having less time at home near end-of-life.

Aim

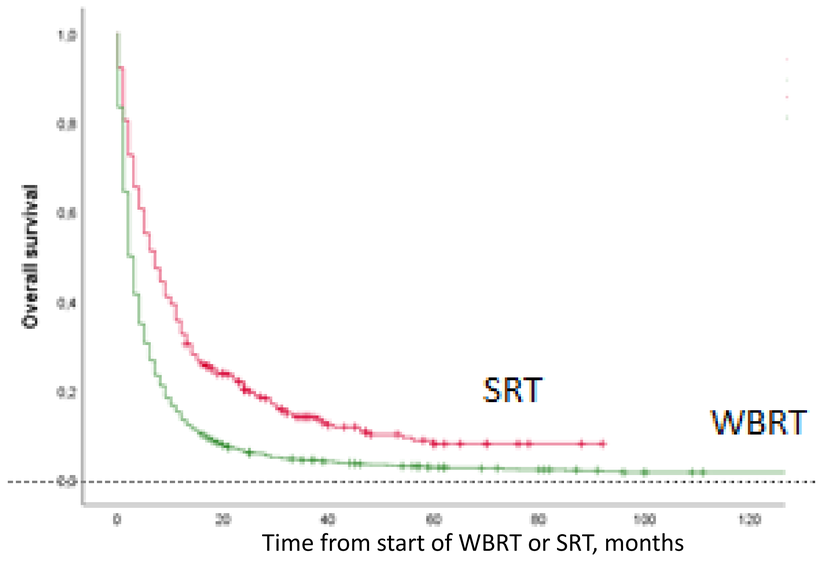
- To identify factors predicting short survival after WBRT in order to aid clinicians and patients in treatment decision making

Methods

- Treatment data for 2140 NSCLC patients with BM treated with WBRT or SRT as initial BM treatment from 2006 through 2018 in our health care region (57% of the Norwegian population) were reviewed
- Complete medical data were available and analyzed for 1496 patients treated at Oslo University Hospital, the largest referral center for RT
- In patients treated with WBRT, patients linving ≤30 days after start of RT were compared to those living >1 year

Results

Overall survival (OS) after start of initial RT
WBRT group (N = 1705) and SRT group (N = 435)



- Median age 65 years
- 4% alive at last follow-up (June 2020)
- 80% treated with WBRT
- Median OS after WBRT = 3 months
- Median OS after SRT = 7 months

Comparing patients living ≤30 days vs. >1 year after WBRT

	≤30 days after WBRT (191pts)	> 1 year after WBRT (160 pts)
Age > 60 year	79%	60%
EMC present	85%	50%
KPS < 70	66%	26%
DS-GPA score ≤ 1.0	80%	26%

ECM: Extracranial metastases, KPS: Karnofsky performance status, DS-GPA: Diagnosis spescfic graded prognostic assessment

- 17% lived ≤30 days after WBRT
- 15 % alive >1 year after WBRT

Conclusions

- Survival after WBRT is generally poor, but with considerable variation
- The use of WBRT should therefore be considered carefully for each individual patient
- ECM present and KPS<70 were associated with poor prognosis; correspondingly, low DS-GPA was confirmed to be associated with short survival
- Our review confirms that low DS-GPA score may guide the clinicians in decision-making regarding which patients that may not benefit from WBRT in terms of OS

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