

INTRODUCTION

- Whole brain radiation therapy (WBRT) is a long considered standard of care for patients with small cell lung cancer (SCLC) with brain metastases but could have significant side effects on cognition.¹
- Stereotactic radiosurgery (SRS) is emerging as a potential alternative to WBRT that has less impact on cognition and quality of life.²

HYPOTHESIS

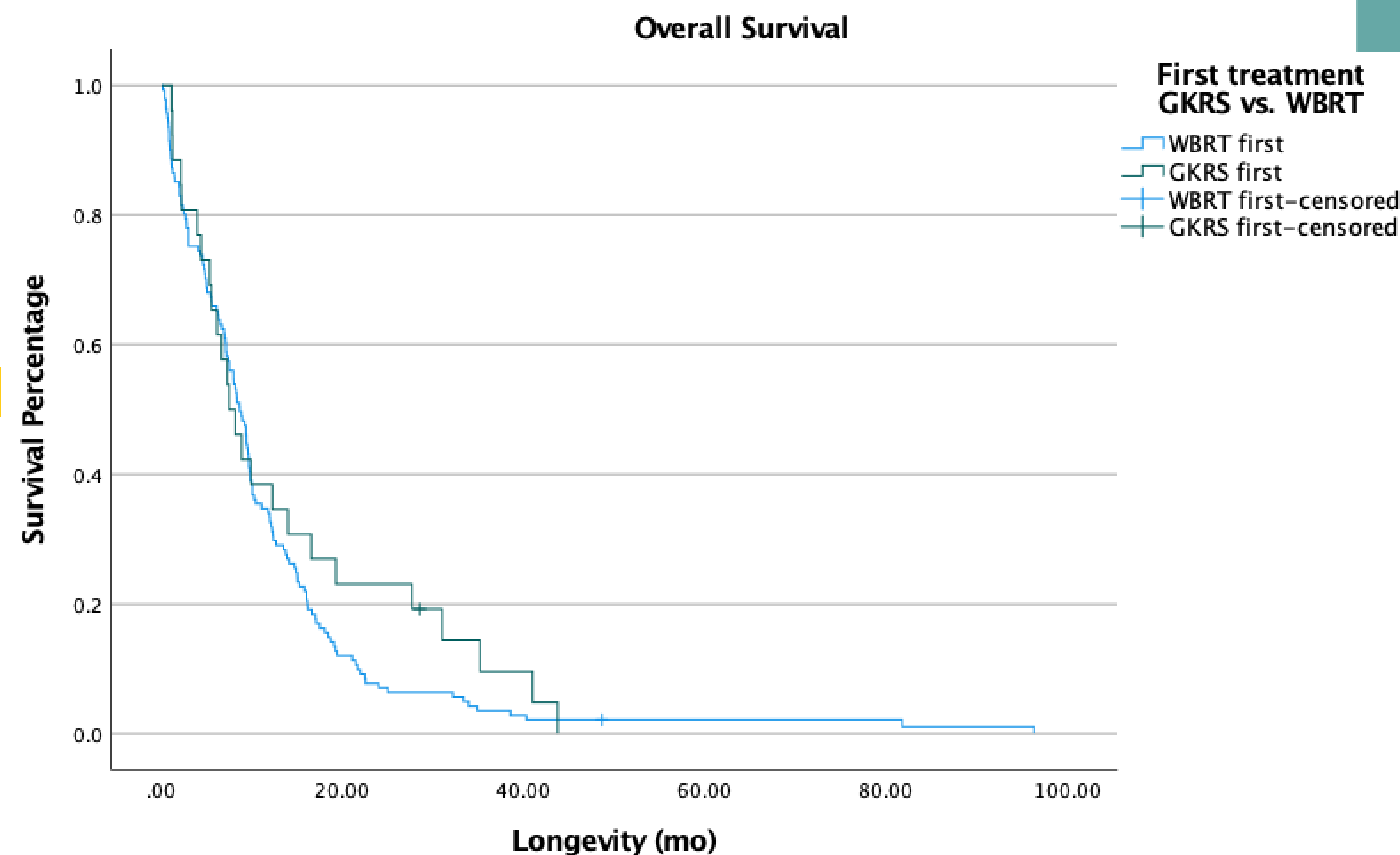
Gamma knife radiosurgery (GKRS) as an initial treatment for patients with brain metastasis from SCLC does not have a worse survival compared to WBRT.

MATERIALS & METHODS

- We performed a single center retrospective review at ECU Heath Medical Center of patients with small cell carcinoma or high-grade, poorly differentiated neuroendocrine carcinoma with brain metastases diagnosed between 2009 and 2020.
- We compared the overall survival of patients who had initial treatment with GKRS to those who had initial treatment with WBRT.
- Patients that received prophylactic cranial irradiation (PCI) were excluded from this analysis.
- Our univariate analysis used Kaplan Meier Curves with log rank test through IBM SPSS Statistics, version 28.0.0.0 (190) to compare our treatment modality.

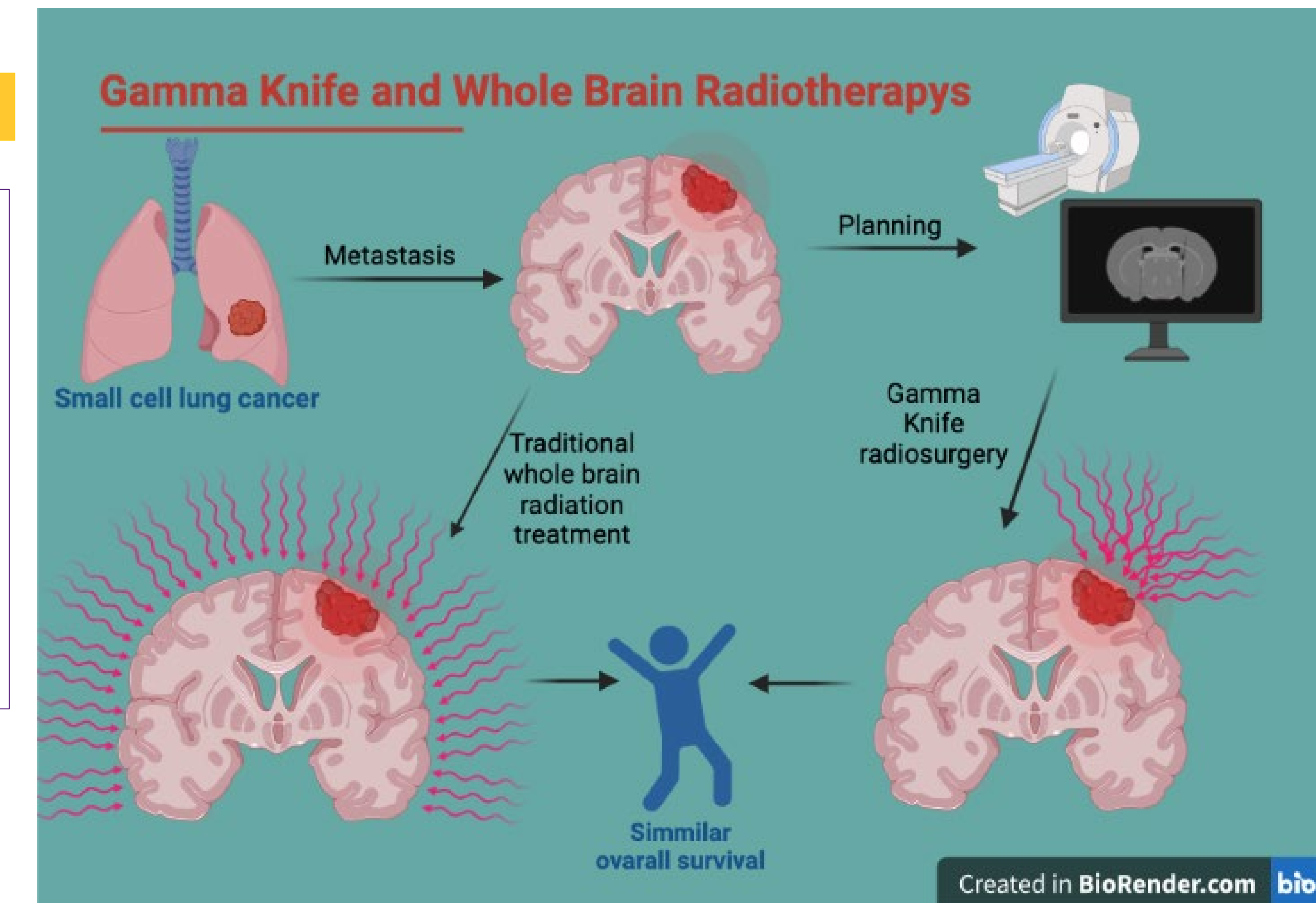
RESULTS

Of 491 patients with small cell lung cancer 167 were identified with brain metastases. 96 of these patients received WBRT while 38 received GKRS. 26 patients were treated with GKRS as the first radiotherapy modality, 12 received WBRT as their first radiotherapy treatment modality. The Kaplan Meier overall survival between the two groups was not significantly different ($p=0.29$). However, patients who had GKRS as a first treatment modality had significantly better survival at 24 months on Chi-Square test ($p= 0.011$).



REFERENCES

- ¹ Myall, N. J. *et al.* Management of brain metastases in lung cancer: Evolving roles for radiation and systemic treatment in the era of targeted and immune therapies. *Neurooncol Adv* . 2021 Nov 27;3(Suppl 5):v52-v62
- ² Chang EL *et al.* Neurocognition in patients with brain metastases treated with radiosurgery or radiosurgery plus whole-brain irradiation: a randomised controlled trial. *Lancet Oncol*. 2009 Nov;10(11):1037-44.



DISCUSSION

- Limitations of this study include the retrospective nature and that it is a single institution study.
- The cohort of patients receiving WBRT may be ones treated prior to regular immunotherapy use, may have a greater number of brain metastases or leptomeningeal spread, or who had more medical complications impacting their survival.
- Further analysis needs to be done on the timing and patterns of recurrence after WBRT and GKRS.

CONCLUSION

- Within our institutional cohort of patients with brain metastases from SCLC, there was no difference in overall survival of the patients that had GKRS upfront compared to those who received WBRT upfront.
- Given the lesser cognitive impact of GKRS as opposed to WBRT, this study supports the recommendation of GKRS being the primary treatment modality for select patients with SCLC and brain metastases.