

## Effect of Gamma Knife Radiosurgery and PD1-Antagonists on Metastatic Melanoma

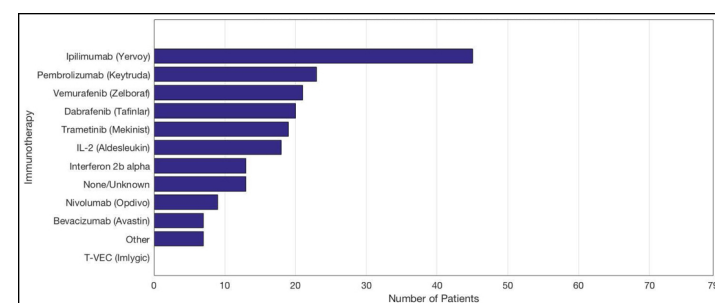
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### Introduction

Stereotactic radiosurgery and chemotherapeutics are used together for treatment of metastatic melanoma, and have been linked to delayed radiation-induced vascular leukoencephalopathy (DRIVL). There have been reports of more intense interactions with new immunotherapeutics targeting programmed cell death 1 receptor (PD1), but their interactions have not been well described, and may result in an accelerated response to GKRS. Here we present data on subjects treated with this combination from a single institution.

### Methods

Records from patients who underwent treatment for metastatic melanoma to the brain with GKRS 2011 to 2016 were reviewed. Demographics, date of brain metastasis diagnosis, cause of death when applicable, immunotherapeutics, and imaging findings were recorded. The timing of radiation therapy and medications were also documented.

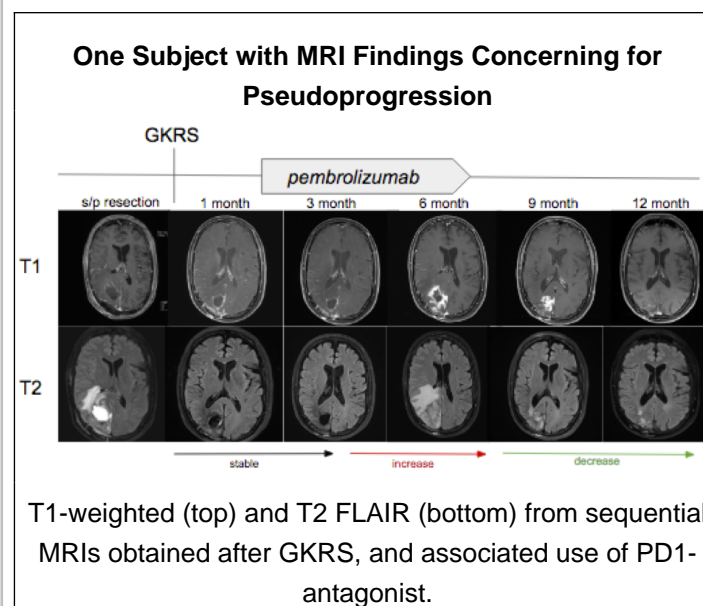


Immunotherapeutics used for the treatment of 79 subjects diagnosed with metastatic melanoma.

### Results

A total of 79 subjects (63.3% male) were treated with GKRS, and 66 underwent treatment with both GKRS and immunotherapy. Regarding the 30 patients treated with anti-PD1 immunotherapy, 21 patients received pembrolizumab, 7 patients received nivolumab, and 2 patients received pembrolizumab and nivolumab.

Serial imaging was available for interpretation in 25 patients, with 13 subjects who received GKRS and anti-PD1 immunotherapy less than 6 weeks of each other. While 4 subjects had indeterminate/mixed findings on subsequent MRI, 9 subjects (69.2%) were noted to have progression. Two of these patients showed progression but subsequent imaging revealed a decrease in progression or improvement on MRI previously targeted lesions by GKRS. None of the 13 subjects had surgery following these combined therapies.



### Conclusions

This data suggests there is need for further investigation of the role for concurrent treatment with PD-1 inhibitors and GKRS to enhance the treatment of metastatic melanoma. We present data on 13 patients who appear to have had some radiologic benefit to this treatment combination, two of whom had radiographic pseudoprogression.

### Learning Objectives

To evaluate radiation-induced changes in patients with brain metastasis secondary to malignant melanoma who received treatment with GKRS and PD1-antagonists.

### References

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### Acknowledgements

Tyler Nordmann, BBmE, for his contribution to statistical analyses and support.