

AbstractID: 8102 Title: Improved target volume delineation and early assessment of radiotherapy for skull base meningioma using 68Ga DOTA-Octreotide PET-CT

**Purpose** Radiotherapy is an important modality in the management of meningioma. We aimed to assess if imaging using 68Ga-DOTA-Octreotide PET-CT before and after therapeutic radiotherapy, could show an early treatment response at the level of tumour surface receptors. **Methods and Materials** A patient with a recurrent right sphenoid wing meningioma (WHO grade 1) was referred for therapeutic radiotherapy. 50Gy/30# was delivered over 6 weeks, and pre and post treatment imaging (6weeks) with 68Ga-DOTA-Octreotide PET-CT. SUV calculations were performed to assess the impact of the radiotherapy delivered on the volume of PET tracer uptake, and the maximum and average SUV values. **Results** The patient tolerated the treatment and imaging procedures well. The pre-treatment image showed that the meningioma was identified well using 68Ga-DOTA-Octreotide. Using a 'Volume of Interest' SUV growth limit of 1.8, it had a Max SUV of 6.8, an Ave SUV of 3.1 and a volume of 4.2cc. 6 weeks following radiotherapy, the lesion showed a response, with reduction in the Max SUV to 4.0, Ave SUV to 2.4 and volume to 3.9cc. **Conclusion** In this case, all parameters measured (Max SUV, Ave SUV, volume) using 68Ga-DOTA-Octreotide PET-CT were reduced 6 weeks following a therapeutic course of radiotherapy. The use of a tracer targeted to a tumour specific receptor improved our identification of the lesion for treatment planning, and was able to demonstrate a response to treatment at a molecular level, much earlier than can be achieved with standard MRI and CT based radiology. Further investigation of this technique may improve our understanding of the mechanism of radiotherapy effect in meningioma, and establish the clinical significance of early PET response on long term outcome. **Conflict of interest:** Research sponsored by Siemens Medical Solutions and The Cambridge University Health Foundation Trust.