Michael Back

Australia

A/Prof Michael Back is Director of Radiation Oncology for the Northern Sydney Cancer Centre at Royal North Shore Hospital. He solely subspecialises in Neuro-oncology with clinical and research interests in improving the outcome of patients managed for brain cancer through sophisticated tumour targeting and radiation therapy delivery. He is also a visiting consultant at ten centres across NSW providing a highly subspecialised patient-centred service for care of those patients diagnosed with brain tumours. Previously he was a specialist radiation oncologist in Singapore (2001-2007) and Newcastle NSW (1996-2000).

Michael has a large academic profile which includes over 125 peer reviewed publications. In 2019 he established a Brain Cancer Imaging Laboratory, to enhance a sophisticated imaging-based research programme which includes clinical trials. A specific aim of the research programme is to develop treatment protocols that optimise the amount of radiation delivered to a brain tumour, whilst protecting the surrounding normal brain tissue.

Topic: Improving Radiotherapy Outcomes in HGG

Glioblastoma decision-making historically based on gadolinium-enhanced MRI T1gd sequences. Improved T2-weighted sequences (T2w) may recognise potential non-enhancing tumour. This study explored T2w abnormalities and extension to adjacent white matter tracts (WMT).

Abnormal T1gd and T2w (both oedema and suspected non-enhancing tumour) regions were segmented, with recording of 3D volumes/WMT extension. An attempt to differentiate non-enhancing tumour was made using sequential MRI and FET-PET to aid in GTV60 definition. Forty-two percent had a component of distant relapse, which predominantly involved the WMTs in 77%. More than 70% occurred in sites of prior T2 abnormality. High T2/T1 quartile had earlier and more distant relapses.

The volume and distribution of T2-weighted abnormalities at initial diagnosis have relevance to the tumour natural history and subsequent patterns of failure. Understanding these features and the associated relationship to adjacent white matter tracts may provide alternative strategies to current isotropic target volume delineation in RT planning protocols.