

**Title : Impact of Short Versus Long Course Whole Brain Radiation Therapy on Memory Function in Brain Metastasis Patients**

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**Asbtract :**

**Background:** Most common intracranial tumor in adults is brain metastasis. Different fractionation schedules used for whole brain radiation therapy are 20 gray/5 Fr, 30 gray/10 Fr, and 40 gray/20 Fr, which in four weeks have shown equivalent response rate, period of improvement, palliative effect, time to disease progression, and survival. However, there is lacking literature on the effect of different fractionation schedules of radiation therapy on memory function.

**Objectives:** Hence, we evaluated memory function in two different fractionation schedules of whole brain radiation therapy (WBRT) in patients with brain metastases.

**Methods:** A total of 20 patients, who were histologically proven primary and recently diagnosed brain metastases, with a RPA class of I/II, and satisfying eligibility criteria were taken into this study. Patients were randomly assigned to whole brain radiation therapy of 40 gray in 20 fractions (group A) and 30 gray in 10 fractions (group B) with concurrent Temozolomide. Memory function assessment was done using P.G.I. Memory scale before, during, and after the treatment, as well as at three months and six months of follow-up. Two groups were compared for with appropriate statistical tests.

**Results:** Patients in group A showed improvement in five domains of memory function (attention and concentration, remote and recent memory, mental balance and verbal retention for similar pair) during radiation therapy, compared to group B patients. However, deterioration of memory function was noted in both groups at 3- and 6-months post chemoradiation therapy.

**Conclusions:** Fourty Gy in 20 fractions given over four weeks with concurrent TMZ 75 mg/m<sup>2</sup> is a better and preferable treatment option for patients with brain metastasis with respect to memory function.