

Before therapy, prophylactic cranial irradiation patients performed worse than TCI patients or than controls on most test scores. During and after WBRT, verbal memory function was influenced by pretreatment cognitive status ($p < 0.001$) and to a lesser extent by WBRT. Acute (T1) radiation effects on verbal memory function were only observed in TCI patients ($p = 0.031$). Subacute (T3) radiation effects on verbal memory function were observed in both TCI and prophylactic cranial irradiation patients ($p = 0.006$). These effects were more pronounced in patients with above-average performance at baseline. Visual memory and attention were not influenced by WBRT.

Conclusions

The results of our study have shown that WBRT causes cognitive dysfunction immediately after the beginning of RT in patients with brain metastases only. At 6–8 weeks after the end of WBRT, cognitive dysfunction was seen in patients with and without brain metastases. Because cognitive dysfunction after WBRT is restricted to verbal memory, patients should not avoid WBRT because of a fear of neurocognitive side effects.

Author Keywords: Brain metastases; Whole brain radiotherapy; Neurocognition; Memory; Early effects

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