

https://dspace.org/

Irradiation and cognition : a neuropsychological assessment of children treated with prophylactic cranial irradiation for acute leukaemia

Whitaker, Sara-Jane D

2015-08-20
http://hdl.handle.net/10539/18296

Downloaded from a DSpace repository. https://dspace.org/

Abstract

Twenty children with a history of acute leukaemia completed a neuropsychological assessment to determine whether cognitive impairment exists after treatment with prophylactic cranial irradiation. Participants were assessed in the domains of intelligence, executive functioning, memory, and social-emotional functioning using a battery of standardised psychological tests. The data obtained from the sample was analysed in accordance with radiation dosage, with one subsample comprising participants irradiated with 12 grays and the other subsample comprising participants irradiated with 18 grays. Each subsample was compared via nonparametric Wilcoxon tests to a suitable comparison group. A dose-effect relationship was found in respect of the cognitive impairment, such that the 18 gray subsample exhibited a wider spectrum of cognitive deficits than the 12 gray subsample. The 18 gray subsample was characterised by mild to moderate deficits in executive functioning, numerical reasoning, and visuospatial processing. By contrast, the 12 gray subsample was relatively free from cognitive impairment. The two subsamples were later collapsed into a single group and the performance of the total sample was analysed in order to provide more powerful statistical results. The resulting neuropsychological profile provides a summary of the cognitive deficits present after treatment with prophylactic cranial irradiation for acute leukaemia. These deficits fall on the milder side of the spectrum and pertain primarily to executive functioning and its associated processes.