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1: [Cancer](#). 2009 Mar 15;115(6):1338-47.



**Injuries to inferior vermis and dentate nuclei predict poor neurological and neuropsychological outcome in children with malignant posterior fossa tumors.**

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**BACKGROUND:** Children treated for a malignant posterior fossa tumor (PFT) are at risk of intellectual impairment. Its severity is not explained by age and radiotherapy alone. The current study was designed to define the correlations between the anatomical damage and the neurological/neuropsychological deficits in children with a malignant PFT. **METHODS:** Sixty-one consecutive children (mean age, 6.0 years) treated for a malignant PFT with surgery, chemotherapy, and radiotherapy underwent a detailed neuropsychological evaluation, including a full-scale intelligence quotient (FSIQ), on average 5.6 years after the diagnosis. The neurological examination was recorded 1 month after surgery and at the time of the neuropsychological evaluation. Cerebellar and brain injuries were scored based on the magnetic resonance imaging (MRI). Correlation of these injuries with neurological and cognitive outcome were performed after adjustment for other potential risk factors (radiotherapy schedule, age, hydrocephalus, duration of symptoms, socioeconomic status, and surgical complications). **RESULTS:** Neurological deficits were strong predictors of low cognitive performances irrespective of the other risk factors. The extent of cerebellar deficits and fine motor dexterity impairment were correlated with the degree of damage to the dentate nuclei and inferior vermis. The IQ scores were inversely correlated with the severity of the damage to the dentate nuclei; mean FSIQ was 83 if they were both intact and 65 in the case of bilateral damage ( $P=.009$ ). **CONCLUSIONS:** Damage to the dentate nuclei and to the inferior vermis, observed on MRI, predict the degree of impairment of neurological and neuropsychological functions in children treated for a malignant PFT. Copyright (c) 2009 American Cancer Society.

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