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Fatal brainstem injury following proton radiation in a patient with medulloblastoma and a germline variant in RNF213

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Abstract

Brainstem injury occurs secondary to radiation to the posterior fossa in up to 2% of pediatric patients. It may occur after months to years after treatment. It has been associated with age less than 5 years and with comorbid conditions such as cerebrovascular disease, diabetes mellitus, and hypertension. Radiation necrosis is often symptomatic and can be fatal. A pathogenic variant in RNF213 was found in a patient who suffered fatal radiation necrosis. This mutation has been associated with moyamoya disease and may predispose to radiation necrosis.

Keywords: brainstem; necrosis; radiation; vasculopathy.