# A Study of Radio-Pathological Diagnosis in 20 Egyptian Children with Brain Tumors

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ABSTRACT

**Background:** Intracranial tumors are the most common solid tumors in children and the therapeutic modality based on the tumor type, grade. **Objective:** The objective of the study was to determine if quantitative diffusion imaging improved the MR imaging of pediatric CNS malignancies by comparing the apparent diffusion coefficient to the histo-pathological tumor grading.

**Methods:** This study included twenty patients (twelve boys, eight girls) with neuroglial solid tumors underwent diffusion weighted MR imaging. The mean age of the patients was 10 years. All patients were submitted to histo-pathological diagnosis and immunohistochemical study. Their pathological diagnosis and tumor grading was carried out according to the World Health Organization classification of brain tumors. Mean apparent diffusion coefficient values obtained from the solid components of each tumor type were compared with the tumor grade. **Results:** The pilocytic astrocyoma, ependymoma and medulloblastoma were the most common type of brain tumors that represented in this studied group as 30% for each. The mean apparent diffusion coefficient (ADC) values for low-grade gliomas; grade I was $1.7 \pm 0.3 \; \square \; 10\text{-}3 \; mm2/sec$ grade II tumors was $1.4 \pm 0.2 \; \square \; 10\text{-}3 \; mm2/sec$, while for grade IV medulloblastoma was $0.7 \pm 0.20 \; \square \; 10\text{-}3 \; mm2/sec$.

**Conclusion:** The histopathological diagnosis remains the gold standard method for pediatric brain tumors assessment. However the apparent diffusion coefficient added more information to MR imaging in differentiating the embryonal tumors (medulloblastoma) from low grade gliomas.