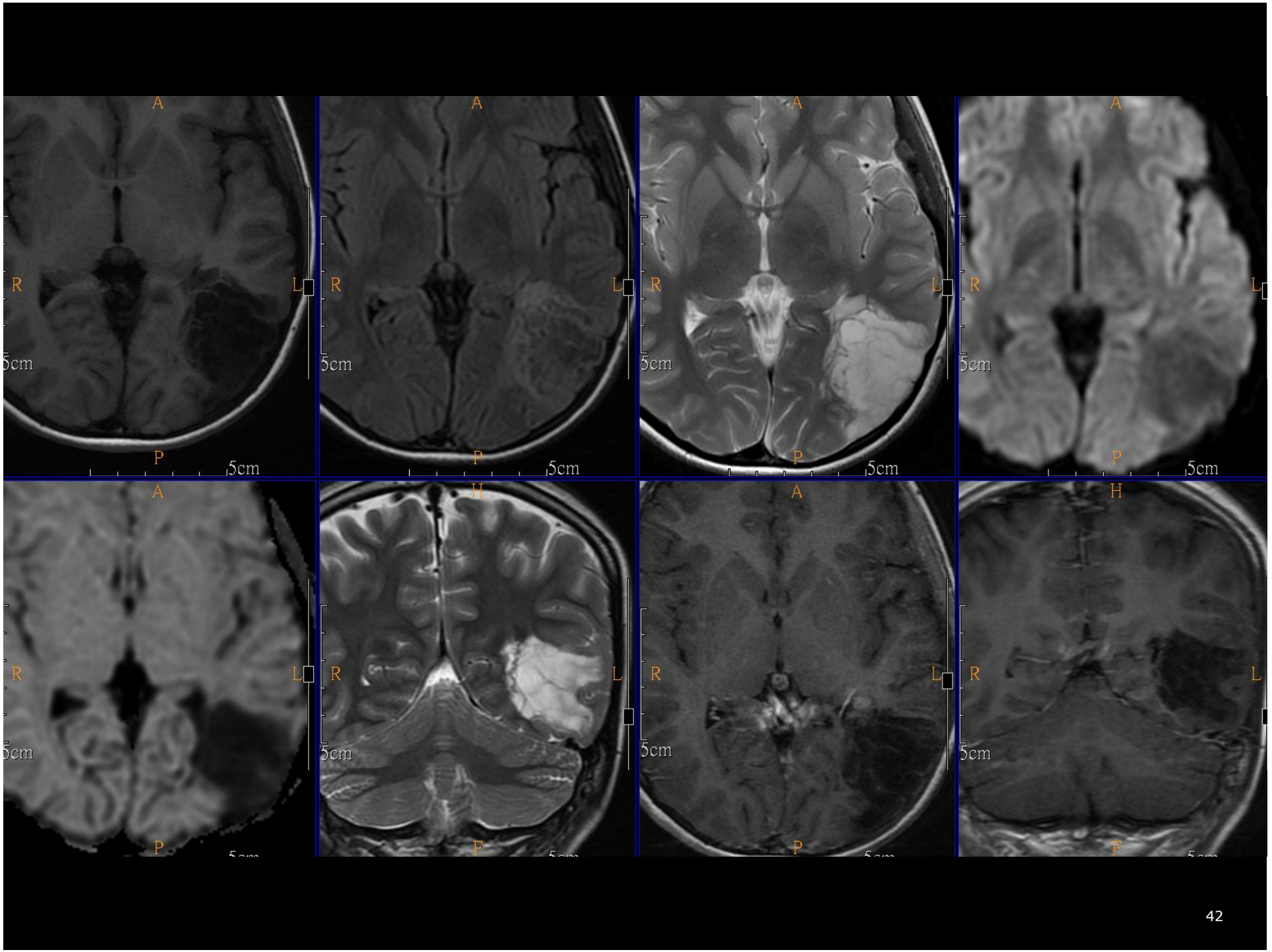
Case 4

Patient Profile

- 11 years old girl
- Chief complaint
  - Seizure for years
- Past history
  - nil

Image

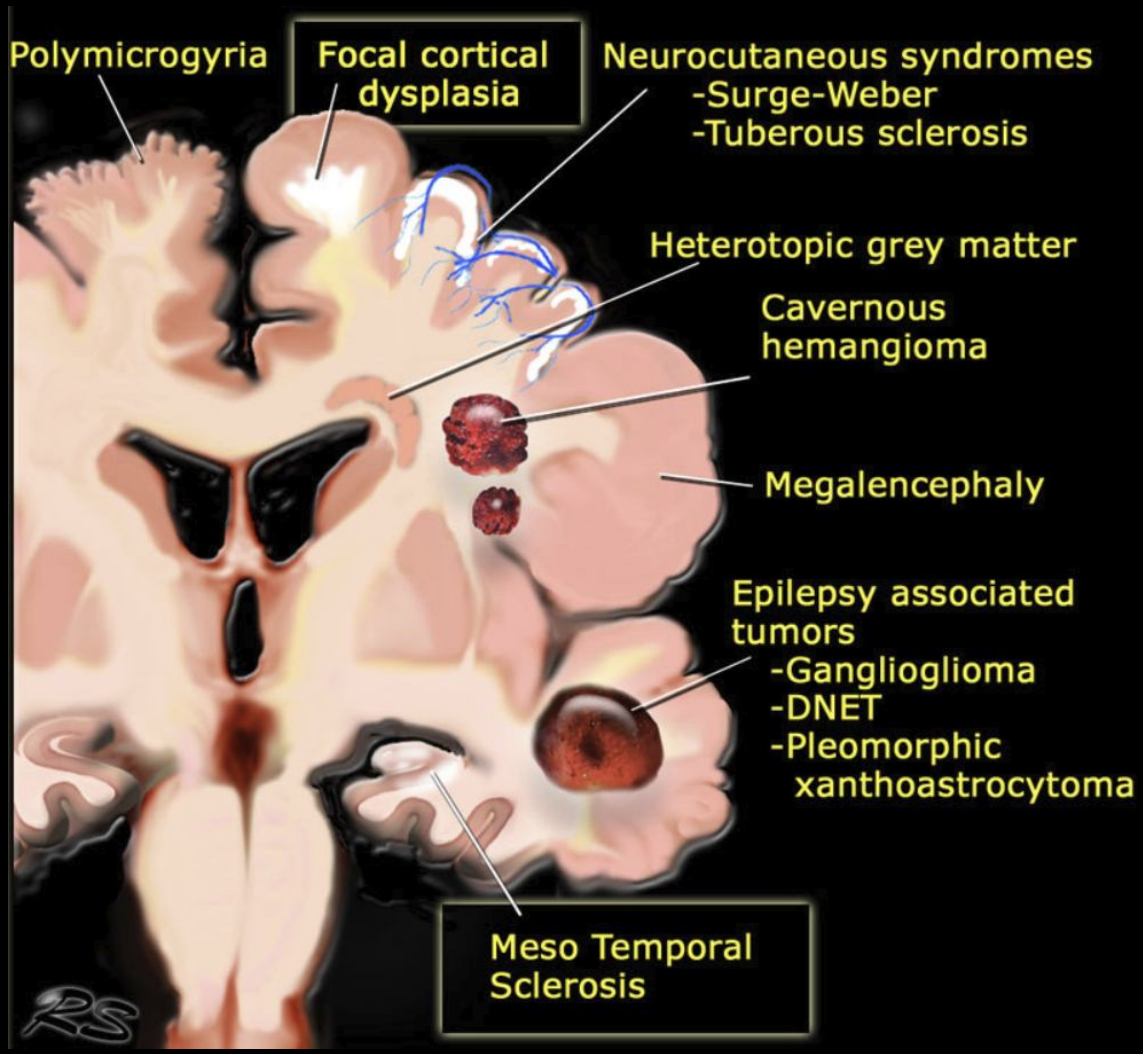
- 2018-03-27 Brain MRI


A
R
L
P
5cm
H
F

Clinical Course

- Diagnosis
  - Previous diagnosis of dysembryoplastic neuroepithelial tumor in other hospital

Common Cause of Seizure



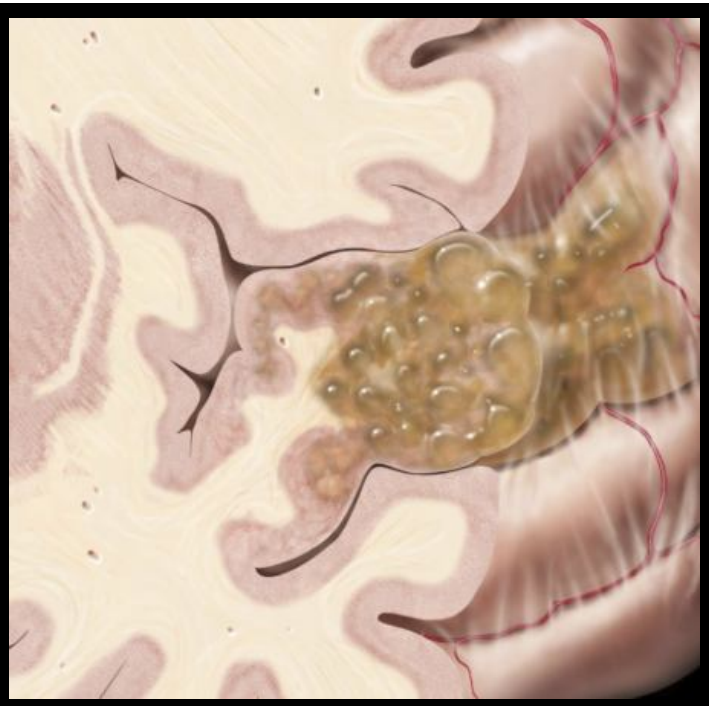
Radiology Assistant
http://www.radiologyassistant.nl

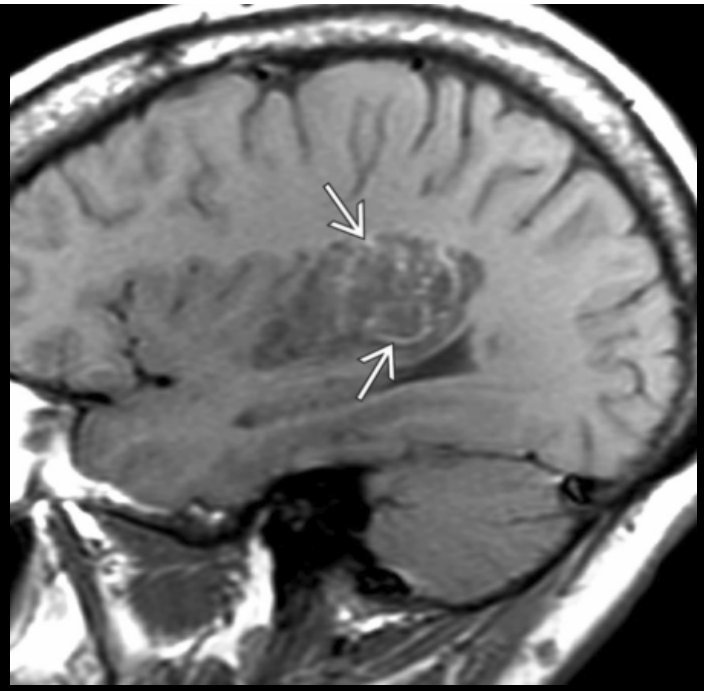
Dysembryoplastic Neuroepithelial Tumor

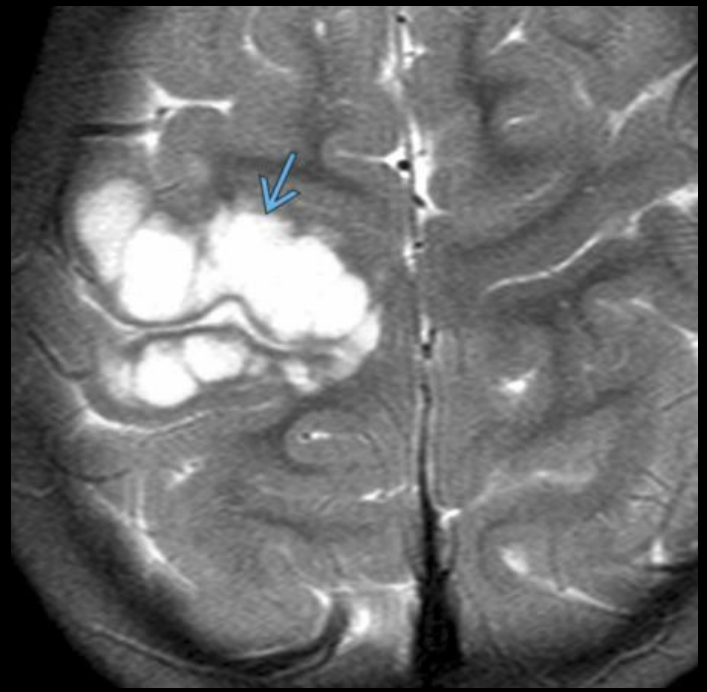
- Benign mixed glial-neuronal neoplasm
- Frequently associated with cortical dysplasia
- WHO grade I brain tumor
- Clinical symptoms
  - Longstanding drug-resistant partial complex seizures in child/young adult
  - Slow growth over years

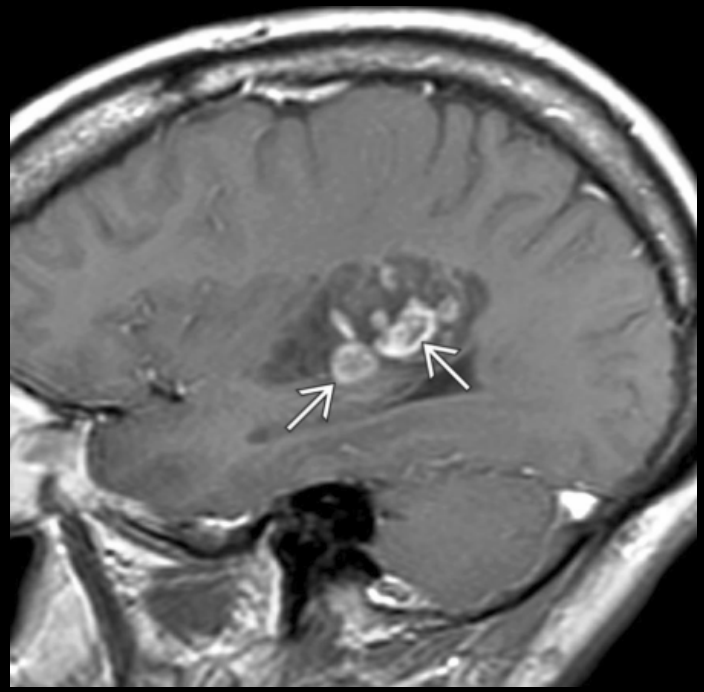
Image Findings

- May occur in any region of supratentorial cortex
  - Temporal lobe most common, followed by frontal lobe
  - Mass frequently "points" toward ventricle
- Sharply demarcated, wedge shaped
  - Cystic ("bubbly") intracortical mass
  - Minimal/no mass effect
  - No surrounding edema
  - Usually does not enhance



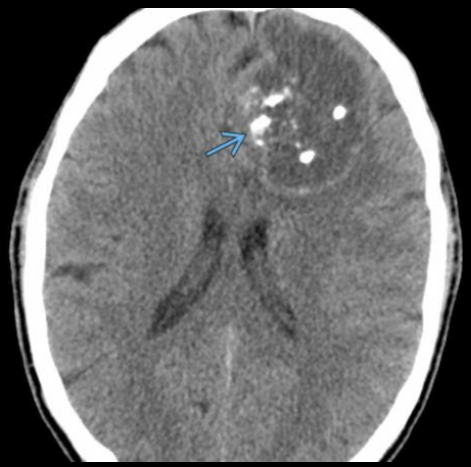


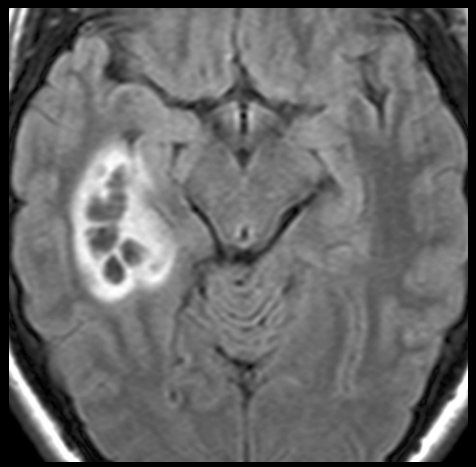


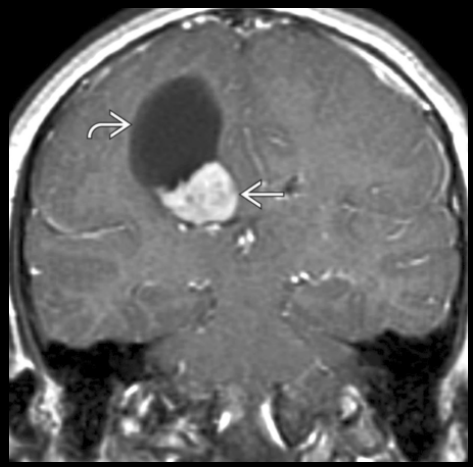


Differential Diagnosis

- Ganglioglioma
  - Ca++ common
  - Frequently solid and cystic components
  - Solid components avidly enhance

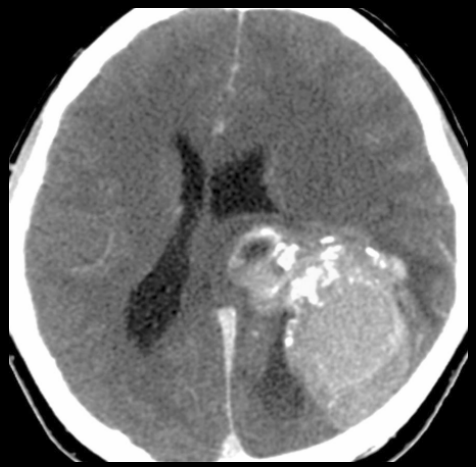


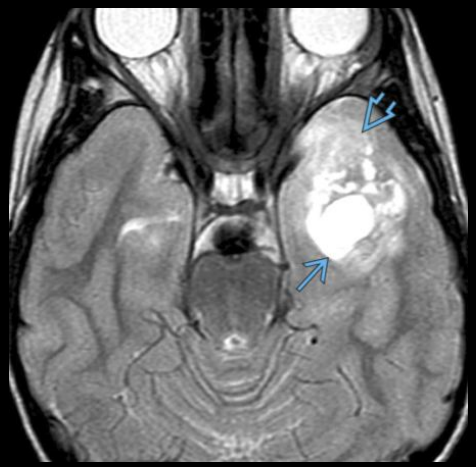


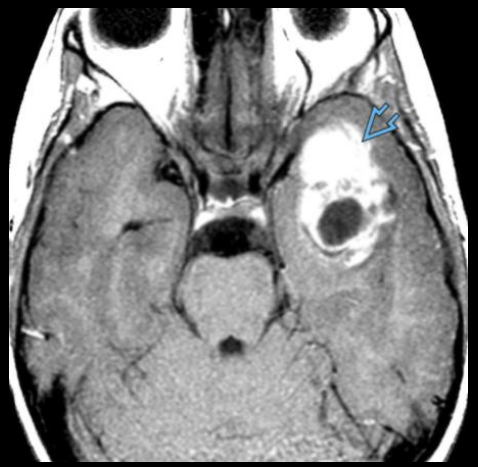


Differential Diagnosis

- Pleomorphic Xanthoastrocytoma (PXA)
  - Enhancing nodule abuts pia
  - May have pial enhancement
  - Look for dural "tail"







Seizure Related of Brain Tumor

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Review

Seizures caused by brain tumors in children☆

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Supratentorial Brain Tumor

Table 1
Main characteristics of the most frequent pediatric brain tumors.

	Frequency	Location	Pathology	5-year survival
Supratentorial brain tumors				
Diffuse astrocytoma (grade II)	++	Cerebral hemispheres: frontal and temporal lobes (less frequently, brainstem and spinal cord)	Meningeal fibrils. No mitoses. No vascular proliferation	+++
Anaplastic astrocytoma (grade III)	+	Supratentorial	Increased cellularity, pleomorphism, mitoses	–
Glioblastoma multiforme (grade IV)	+	Supratentorial	Increased cellularity, pleomorphism, mitoses. Vascular proliferation. Necrosis	––
Ganglioglioma	+	Cerebral hemispheres: temporal > frontal	Mixture of neoplastic glial and neuronal elements	++++
Dysembryoplastic neuroepithelial tumor (DNET)	–	Cerebral hemispheres: temporal > frontal> parietal lobes. Centered in the cerebral cortex, although it might extend to the white matter	Multinodular microcystic lesions with floating neurons. Pleomorphism, glial-neural elements. May be surrounded by areas of dysplasia. Limited mitoses.	++++
Supratentorial primitive neuroectodermal tumor	+	Cerebral hemispheres	Undifferentiated or poorly differentiated neuroepithelial cells. Pathology similar to neuroblastoma.	+
				Variable depending on pathology and age. Higher risk of relapse than medulloblastoma
Oligodendroglioma	–	Cerebral hemispheres (rarely medulla)	Honeycomb appearance: repetitive pattern of similar rounded cells with perinuclear halo	Variable depending on the other histologic components of the tumor

Supratentorial Brain Tumor

Table 1
Main characteristics of the most frequent pediatric brain tumors.

	Frequency	Location	Pathology	5-year survival
Posterior fossa tumors				
Pilocytic astrocytoma	++++	Cerebellum (less frequently cerebral hemispheres, optic pathway, hypothalamus, and brain stem)	Compact areas with Rosenthal fibers and spongy areas with microcysts	++++
Medulloblastoma	++++	Posterior fossa	Classic variant: densely packed cells with hyperchromatic nuclei and scant cytoplasm	+++
			Desmoplastic/nodular variant: nodular, reticular-free zones of neuronal maturation surrounded by densely-packed mitotically active cells	Variable depending on pathology and age
			Extensive nodularity variant: expanded lobular architecture	
			Large cell variant: monomorphic cells with large, round, vesicular nuclei with prominent nucleoli	
			Anaplastic variant: cells with marked nuclear pleomorphism and nuclear moulding	
Ependymoma	+++	2/3 infratentorial, 1/3 supratentorial	Rosettes and pseudorosettes. Histologic features predict degree of malignancy poorly	++
Hypothalamic tumors				
Hypothalamic hamartoma	–	Hypothalamus	Abnormally distributed, but cytologically normal small neurons and glia	++++