وقل رب زدني علماً

النادي الطبي

PERIPHERAL NERVOUS SYSTEM

SUBJECT : Pathology- TABLE

LEC NO. : 1

DONE BY : Sami Alodeh

#كلينيكال_إلا_شحطة

PNS

Pathology Lecture 1

Central Nervous System Tumors

GLIOMAS

1.ASTROCYTOMA (Commonest glial tumor)

WHO GRADE	ANATOMICAL SITE & AGE	GROSS	MICROSCOPIC					GENETICS	OTHER INFORMATION
			FEATURES	Nuclear pleomorphism	Mitotic activity	Necrosis	Vascular proliferation		
GRADE I (Pilocytic Astrocytoma)	**Commonly cerebellum** **Sometimes 3rd ventricle, optic nerve** **AGE:** Children and young adults	**- Often cystic (With mural nodule) (VERY COMMON PRESENTATION)** **OR** **-Well-circumscribed solid mass**	**- Bipolar cells with long, thin "hairlike" processes** **COMMONLY SEEN:** **- Eosinophilic granular bodies** **- Rosenthal fibers (Carrot like)** **- Biphasic appearance, compact fibrillary, and loose microcystic** GFAP+ (IHC)	-	NO MITOSIS	NO NECROSIS	NO V.P	**- BRAF mutation or translocation** **- No IDH1 or IDH2 mutation**	N/A
GRADE II (Diffuse Astrocytoma)	**Commonly in the cerebral hemisphere** **AGE:** 4th to 6th decade	**- Poorly defined infiltrative tumors that distort the invaded brain without forming a discrete mass** **- Cut surface:** **Either firm or soft and gelatinous** **+/- cystic degeneration**	**- Mild to moderate increase in the number of glial cell nuclei** **- Fibrillary background** - GFAP + **- No distinct transition between neoplastic and normal tissue**	VARIABLE PLEOMORPHISM	NO MITOSIS	NO NECROSIS	NO V.P	**- IDH1, IDH2 genes mutation**	**- Can be static or progressive; the mean survival is > 5 years** **- Well differentiated**
GRADE III (Anaplastic Astrocytoma)	**Commonly in the cerebral hemisphere** **AGE:** 4th to 6th decade	**As grade II**	**- More densely cellular** - GFAP +	GREATER NUCLEAR PLEOMORPHISM	MITOTIC FIGURES ARE PRESENT	NO NECROSIS	NO V.P	**- IDH1, IDH2 genes mutations**	N/A
GRADE IV (Glioblastoma Multiforme) (GBM)	**Commonly in the cerebral hemisphere** **AGE:** 4th to 6th decade	**- Variation from region to region is characteristic** **- Some are firm and white** **- Others are soft and yellow (tissue necrosis)** **- Others cystic degeneration and hemorrhage**	**- Similar to GRADE III with:** **1. Necrosis (bands of necrosis with palisaded tumor cells along the border)** **OR** **2.Microvascular (glumeruloid) proliferation.**	PRESENT	PRESENT	PRESENT	PRESENT (glumeruloid)	**- Inactivation of p53 & Rb** **- Activation of PI3K** **- Amplification of EGFR**	**- Prognosis: Very poor; with treatment, the median survival is only 15 months** **- CT/MRI: Supratentorial ring enhancing tumor with surrounding edema**

2.Oligodendroglioma

WHO GRADE	ANATOMICAL SITE & AGE	GROSS	MICROSCOPIC	GENETICS	OTHER INFORMATION
GRADE II	- Mostly in the cerebral hemispheres (frontal or temporal lobes) AGE: More in the 4th and 5th	- Infiltrative form gelatinous, gray masses - May show cysts, focal hemorrhage, and calcification (VERYY COMMON)	- Sheets of regular cells with spherical nuclei containing finely granular chromatin surrounded by a clear halo of cytoplasm (Fried egg appearance) - A delicate network of anastomosing chicken wire capillaries - Calcification (in 90%) - Mitotic activity is usually low	- IDH mutation with Co-deletion of 1p and 19q chromosomal segments	- Survival of 10- 20 years for well-differentiated (WHO grade II) - Presents with neurologic complaints (seizures)
GRADE III	- Mostly in the cerebral hemispheres (frontal or temporal lobes) AGE: More in the 4th and 5th	---	- More aggressive with higher cell density, nuclear anaplasia, increased mitotic activity, and often microvascular proliferation & necrosis.	- IDH mutation with Co-deletion of 1p and 19q chromosomal segments	- Survival of 5-10 years for anaplastic (WHO grade III) - Presents with neurologic complaints (seizures).

3.Ependymoma

WHO GRADE	ANATOMICAL SITE & AGE	GROSS	MICROSCOPIC	GENETICS	OTHER INFORMATION
GRADE II	- Arise next to the ependyma-lined ventricular system - In the first 2 decades of life: near the fourth ventricle - In adults: the spinal cord (most commonly)	- Well-demarcated, solid, or papillary masses extending from the ventricular floor	Regular, round to oval nuclei and granular chromatin in a fibrillary background. - Tumor cells may form round or elongated structures (rosettes, canals) -Perivascular pseudorosettes: tumor cells are arranged around vessels	N/A	- The clinical outcome for completely resected supratentorial and spinal ependymomas is better than for those in the posterior fossa
GRADE III (Anaplastic ependymomas)		----------	- Increased cell density, high mitotic rates, necrosis, microvascular proliferation, and less ependymal differentiation.	N/A	N/A

DONE BY: SAMI ALODEH