Medulloblastoma

Medulloblastoma is a common tumor of the CNS that occurs in the cerebellum. It is most commonly found in children and rarely found in adults. This tumor is neuroectodermal in origin and is generally poorly differentiated. Due to its location in the cerebellum, it presents with truncal ataxia and a wide-based gait. If large enough, it can occlude CSF flow in the fourth ventricle and cause hydrocephalus, which presents with nausea, vomiting and papilledema. Histologically, small anaplastic blue cells are seen amidst large amounts of mitotic figures signifying rapid growth. Cells can also be seen arranged in Homer-Wright rosettes, which are cells arranged in a flower-like design around a central core of fibers of unmyelinated axons and cell processes. This tumor tends to have a poor prognosis due to its ability to disseminate throughout the CSF, but it is very radiosensitive and can have a high survival rate with radiation therapy.

PLAY PICMONIC

Pathophysiology

Occurs in Children
Child
These tumors are most commonly identified in children, with rare occurrences in adults.

Cerebellum
Silver-cerebellum-bell
This tumor occurs in the cerebellum and subsequently presents with symptoms of truncal ataxia and wide-based gait.

Fourth Ventricle
(4) Fork Vent
This tumor can occur in the 4th ventricle, potentially causing obstruction to CSF outflow, with resulting hydrocephalus.

Diagnosis

Small Blue Cells
Small Blue-spots
This tumor is characterized by anaplastic small blue cells that are poorly differentiated.

Lots of Mitotic Figures
Mitten Figure
This tumor has the propensity to proliferate rapidly, signified by the presence of many mitotic figures indicating active cell division. This is important to recall when considering the worrisome metastatic potential of this primary CNS tumor.

Homer Wright Rosettes
Home Rose-bouquet
Rosettes are a stylized floral design used historically in sculpture and architecture. In histology, Homer Wright Rosettes describe tumor cells that are typically characterized as small, round and blue, in rosette patterns around a neuropil. These rosettes are associated with histological findings in medulloblastomas.

Signs and Symptoms

Hydrocephalus
Hydras-in-head
Rapid growth of this tumor can obstruct CSF outflow and cause hydrocephalus, resulting in nausea, vomiting and papilledema.

Ataxia

A-taxi

Due to the involvement of the cerebellum, many patients have symptoms of truncal ataxia. This presents clinically as a wide-based gait, variable starting and stopping, unequal steps and deviations laterally.

Wide-based Gait

Wide Gate Between Legs

Due to the involvement of the cerebellum, many patients have symptoms of wide-based gait, also called “drunken sailor” gait. This disruption can lead to a wide-based gait, where a person walks with their feet placed farther apart to compensate for reduced stability and coordination.

Treatment

Radiosensitive

Radio-sensitive-tower

This tumor is exquisitely radiosensitive and can have a high survival rate with radiation therapy.