There are two main types of high grade (aggressive) astrocytoma: anaplastic astrocytoma and glioblastoma multiforme (GBM). Childhood astrocytomas fall under the general category of central nervous system (brain and spinal cord) in children. Astrocytomas are not common in children. Nonetheless they do represent the second most frequent type of cancer found in children under the age of fifteen.

About 1,200 to 1,500 children per year in the United States develop this kind of brain tumor. Worldwide, over 40,000 children are so diagnosed each year. A few types of brain cancer are most common in boys, such as PNET (primitive neuroectodermal). But astrocytomas are evenly divided among boys and girls. About 20 percent occur in children under the age of two. Astrocytomas represent about 10 percent of all brain tumors.

The connective (supporting) tissue of the brain is composed of cells called glial cells. Astrocytes are star-shaped cells that are part of the glial (connective) tissue matrix of the brain. When they become malignant, astrocytes form a tumor called an astrocytoma (the suffix ‘oma’ is the medical term for a cancer). Because they are associated with the glial tissue, astrocytomas are grouped with the gliomas, cancers of the connective tissue of the brain.

Glial cells can be one of three main types: astrocytes, oligodendrocytes and ependymal cells. Astrocytomas are gliomas that are principally composed of astrocytes. Overall, astrocytomas represent 13 percent of all brain tumors, (while glioblastoma multiforme—see below—represents another 23 percent).

Astrocytomas can be either slow or fast growing. Some astrocytomas (such as pilocytic astrocytoma) have a low degree of malignancy or can be even classified as benign, whereas others such as anaplastic astrocytoma or glioblastoma multiforme (GBM) are very aggressive. Low-grade astrocytoma is also known as pilocytic astrocytoma. There are two main types of high grade (aggressive) astrocytoma: anaplastic astrocytoma and glioblastoma multiforme (GBM).

The causes of pediatric brain are largely unknown. Certain things however, are known: exposure to radiation in the treatment for acute lymphocytic leukemia (ALL) causes an increased risk of developing brain. The chemotherapy agents known as nitrosureas (nitrogen mustards) are also associated with an increased risk of later development of astrocytoma. Astrocytomas are therefore not uncommonly a result of treatment for previous cancer. Various familial and genetic tendencies also exist.