

Neoplasms (Tumors)

Malignant Neoplasms (Cancer)

Malignant neoplasms, by definition, are those that invade surrounding tissues and/or can spread through the CSF, bloodstream or lymphatic channels to distant sites. Malignant tumors cannot generally be cured by surgical removal. Malignant neoplasms of the brain or skull (or any other part of the body) are classified as either primary or secondary. Secondary neoplasms, also known as metastases, are those that arise in some other part of the body and spread to the brain or skull. Primary malignant neoplasms are those that originate in the brain or skull itself.

Metastases to the brain and skull are very common. Common cancers that metastasize to the brain include breast and lung cancer, and melanoma. Metastases can occur in the brain, skull, nerves, dura or CSF.

Primary cancers of the skull are very rare other than multiple myeloma and lymphoma which are cancers of the bone marrow.

Cancer of the brain is relatively common. In adults, the most common cancers of the brain are the **glial neoplasms (astrocytomas, ependymomas, and oligodendrogliomas)** and the most common of the glial neoplasms are the astrocytomas. Astrocytomas are classified as follows:

- Grade I benign astrocytoma, pilocytic astrocytoma
- Grade II cellular astrocytoma
- Grade III **anaplastic astrocytoma**
- Grade IV glioblastoma or **glioblastoma multiforme (GB, GBM)**

The higher the grade, the more aggressive is the tumor. Glioblastoma is the most common brain tumor in adults.

A partial list of primary cancers that develop from the various structures of the skull and brain are as follows:

- Bone multiple myeloma, lymphoma, osteosarcoma
- Dura, arachnoid malignant meningioma, malignant nerve sheath tumor
- Brain (glia) astrocytoma, ependymoma, oligodendroglioma
- Brain (neurons) medulloblastoma (primarily pediatric), primitive neuroectodermal tumor (primarily pediatric)
- Pineal body germinoma

Malignant gliomas do not metastasize outside the brain. However they invade and spread throughout the brain. Ependymomas, medulloblastomas, primitive neuroectodermal tumors and germinomas can spread to distant sites in the nervous system through the CSF.

One other primary malignancy of the brain is **primary central nervous system lymphoma**.

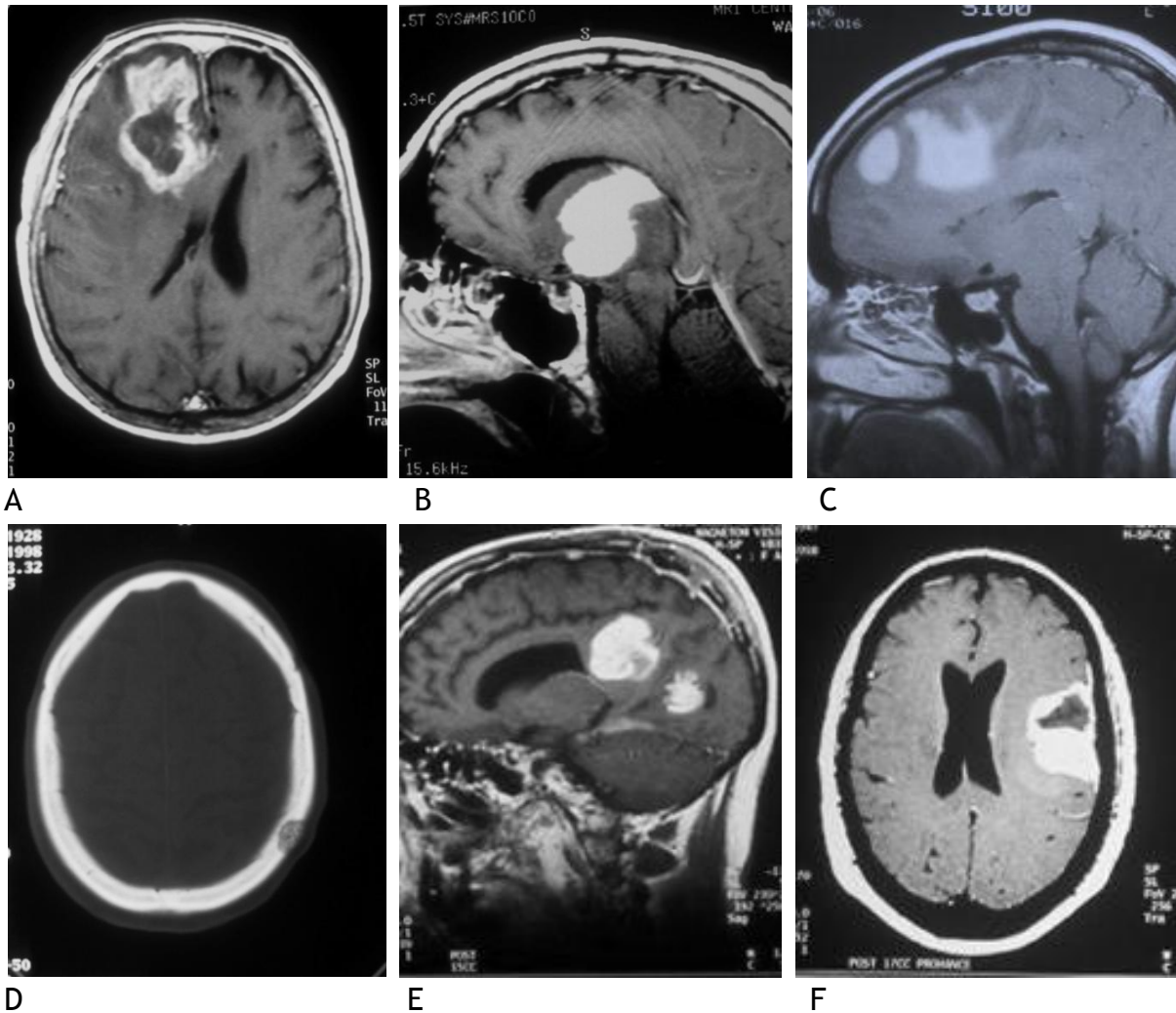


Figure 8: Malignant Brain / Skull Tumors

- A. Glioblastoma multiforme
- B. Primary CNS lymphoma
- C. Oligodendroglioma
- D. Metastasis to skull (lower right)
- E. Brain metastases, melanoma
- F. Malignant meningioma