Case Report

Astroblastoma

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Introduction: Astroblastoma is a rare glial neoplasm with preferential manifestation in young adults, histologically characterized by a typical perivascular pattern of astrocytic cells with broad non-tapering processes radiating towards a central blood vessels. The biological behavior of astroblastoma is variable. In the absence of sufficient clinico-pathologic data, it has been decided not to establish a WHO grade and they are listed in the category of neuroepithelial tumor of unknown origin1.

Case report: A 10 year old girl presented in the neurosurgery outpatient of Apollo hospital Dhaka with intermittent frontal headache and history of seizure two years back which persisted for six months and was controlled by anti-convulsion drugs. Now for the last one month she has developed right sided weakness, unable to stand or walk with loss of appetite and occasional headache. On examination, her Glasgow coma scale was 15 (E4V5M6), both pupils were equally reactive to light with normal vision and other vitals. But there was right sided muscle power weakness. Her routine laboratory examination and chest x ray was normal. MRI scan of brain revealed a mass in the left parietal supratentorial region consistent with astrocytoma. Left fronto-parietal craniotomy with removal of the tumor mass was done and the specimen was sent for histo-pathological examination. Grossly, the specimen consisted of one irregular grey brown mass measuring 6x4x3 cm. Cut surface was solid and homogenous. Microscopically, the tumor was characterized by perivascular pseudorosettes pattern proliferation of glial cell like cells with broad, non tapering processes towards blood vessels. The stromal blood vessels show collagenous thickening and hyalinization of the wall with focal obliteration of the lumen (Fig:1).

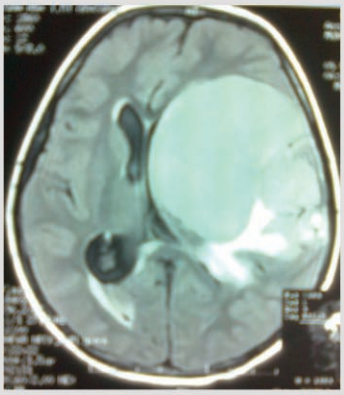

Figure 1: Magnetic resonance imaging showed a large well-defined mass in the left parietal region extending from the cortex to the periventricular region.

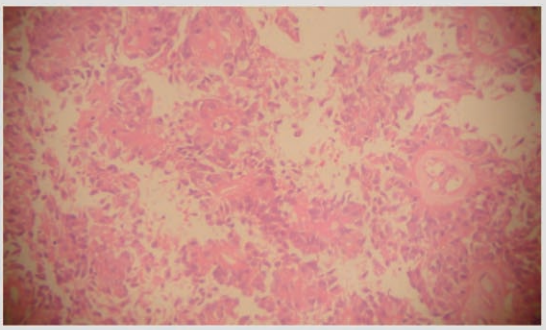

Figure 2: Round to oval cells in a fibrillary background forming perivascular pseudorosettes in astroblastoma.

The tumor was non -infiltrative and surrounded by normal brain tissue. Histo-morphologically, a diagnosis of astroblastoma was made.

Discussion: Astroblastoma, a rare tumor of cerebral hemispheres has been known to occur from infancy to fifth decade2,3,4,5. The cell of origin of astroblastoma is still a debatable entity, but widely accepted to be the astroblast - an intermittent cell between spongioblast and astrocytes. Till recently, the possible origin from tanycyte was reported 6,7, however; till date no consensus has been reached whether it arises from an immature astroblast or by process of differentiation of astrocytes6. Clinically raised intracranial pressure and seizure episodes remain the common presentation. Others may present with signs and symptoms pertaining to anatomical structures involved like visual loss, memory disturbances, seizures, weakness, and altered sensorium3,4,8 . Cerebral hemispheres, mostly frontal and occipital lobes are the site favored by these tumors as in our case, but corpus callosum, cerebellar hemispheres, optic nerves, brainstem, and cauda equina tumors have been reported in the literature6,9.

On MRI, these tumors tend to be large lobulated masses which characteristically extend from the peripheral cortex to the periventricular region. On imaging, these tumors are well-demarcated lobular tumors. T1 and T2 weighed sequences of these tumors appear well demarcated, heterogeneous solid-cystic components with inhomogeneous contrast enhancement. Solid component give typical heterogenous appearance on MRI, and peritumoral T2 hyperintensity is less compared to their large size10. In spite of the characteristic imaging features, they are usually confused for glioma as in this case, primitive neuroectodermal tumors (PNET), or ependymoma 2,4.

Histologically, these tumors are characterized by

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perivascular pseudorossets throughout the tumor tissue more distinctly observed in solid areas of tumor. Most of the tumor cells are monotonous with pseudorosettes arrangement pattern. These rosettes were characterized by short and thick blunt ended foot plates of astroblastoma cells directed toward the central blood vessel. These pseudorosettes are also observed in glioblastoma and anaplastic astrocytoma, but appearance remains focal, while in astroblastoma these are spread all over the tumor tissue. Ependymoma also can have pseudorosettes, but arrangement of cells remains more compact and cytoplasmic processes are thin, tapering toward central vessel and often fibrillated compared to thick and blunt ended in astroblastoma cells. Blood vessels in tumor tissue show areas of hyalinization. Surgical excision of the tumor remains the mainstay of the treatment, which achieves decompression of tumor relieving raised intracranial pressure and decreases the cellular load. As these tumors generally present with raised intracranial pressure, role of surgery as a primary therapy is well justified2,3,4. In postoperative period, chemotherapy and radiotherapy have been tried in different series with limited success4,6,13. The overall prognosis of this tumor remains average with average survival being 4 years after the diagnosis in several series 4,6,8,13,14. In some patients, chemotherapy with methotrexate, vincristine, and leukovarin have been tried successfully6. The present consensus is to do surgical excision of the patients with postoperative radiotherapy and chemotherapy with the grade of excision being the major determinant of prognosis14.

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