Oligoastrocytoma – A Case Report

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Abstract:
Oligoastrocytoma is a mixed variety of Oligodendroglioma. At least half the tumors generally classified as Oligodendrogliomas actually consist of mixed-cell forms. The most common mixer is with neoplastically transformed astrocytes. We are reporting a case of Oligoastrocytoma in a 24 years old female at her right frontal region of brain, diagnosed by MR scan.

Key words: *Oligoastrocytoma, MRI, CT scan*

Introduction:
Oligodendrogliomas are uncommon gliomas arising from a specific type of giant cell, the oligodendrocyte and when mixed with astrocyte, is called an oligoastrocyte[1]. On t he basis of World Health Organization (WHO) classification, these tumors are graded as either low grade (WHO grade II) or anaplastic (WHO grade III) type. These tumors typically occur in young adults and manifest with partial or generalized seizures[2]. Although less common, patients may present with headaches or may have no symptoms at all[3].

Case Presentation:
Mrs. Bilkis, a 24 years old lady, from Sonargaon, Dhaka was relatively well two years back. Then she developed gradual loss of vision in right eye and went to an eye hospital. From there she was referred to Radiology & Imaging department for CT scan & MRI of brain. A space occupying lesion was demonstrated in her right frontal region of brain which was diagnosed as a frontal glioma and after being operated, the mass was histopathologically diagnosed as oligoastrocytoma (WHO grade II). Now after two years she again developed loss of vision on her right eye and generalized seizure for 4 to 5 episodes in one night and admitted in Dhaka Medical Hospital. An MRI of her brain was done in Radiology & Imaging department.

Radiological Findings:
MRI of brain revealed a patchy, moderately enhancing T1W iso to hypointense and T2W hyperintense lesion measuring about (2.75 x 2.5) cm in the right frontal lobe of brain. Another CSF intensity rim enhancing lesion measuring about (6.0 x 5.5) cm was noted beside it that might be collection of necrotic tissue. The lesion caused contralateral shifting of cingulate gyrus, effacement of ipsi-lateral ventricle and dilatation of contralateral ventricle. It was diagnosed as recurrence of the previous lesion (Oligoastrocytoma, WHO grade II). The MRI of previous lesion (Operated two years back) revealed same kind of MRI features and unenhanced CT scan demonstrated a fairly large area of partially calcified mixed density mass in the right frontal region of brain. Following second operation the histopathology report revealed two fragments of brain tissue, of which one fragment showed a cellular tumor composed of astrocytes and round to polygonal cell with peri-nuclear halo. No granuloma or malignant cell was found.

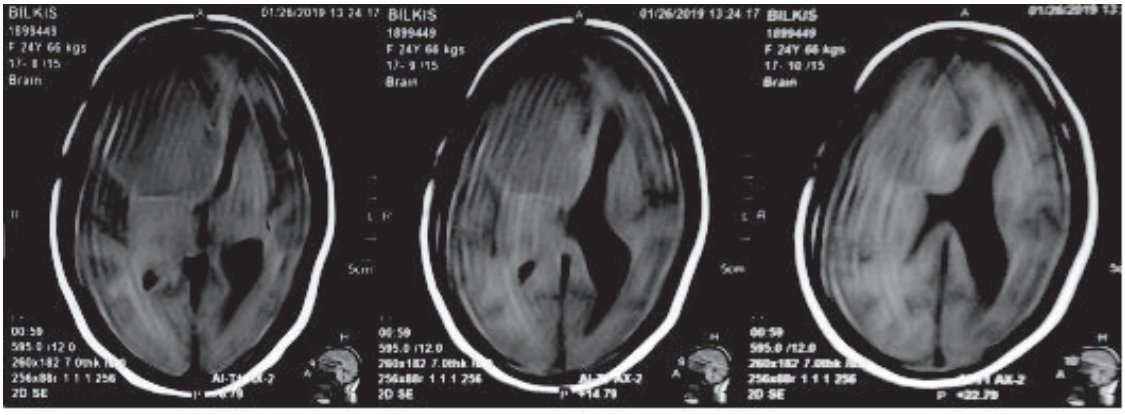

Fig 1: *T1W axial image showing iso to hypointense mass at right frontal region*

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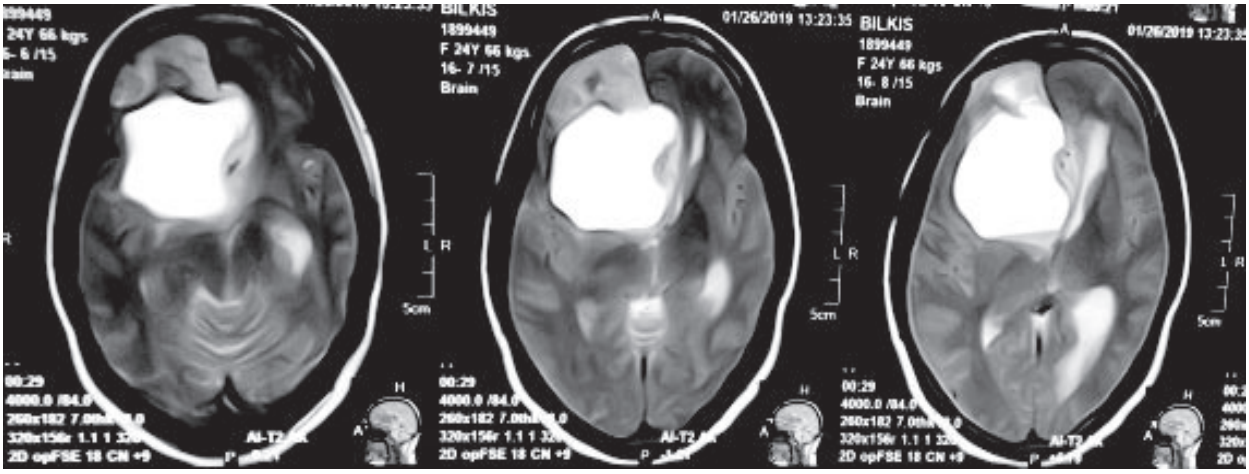

Fig. 2: *T2W axial image showing hyperintensity of the lesion.*

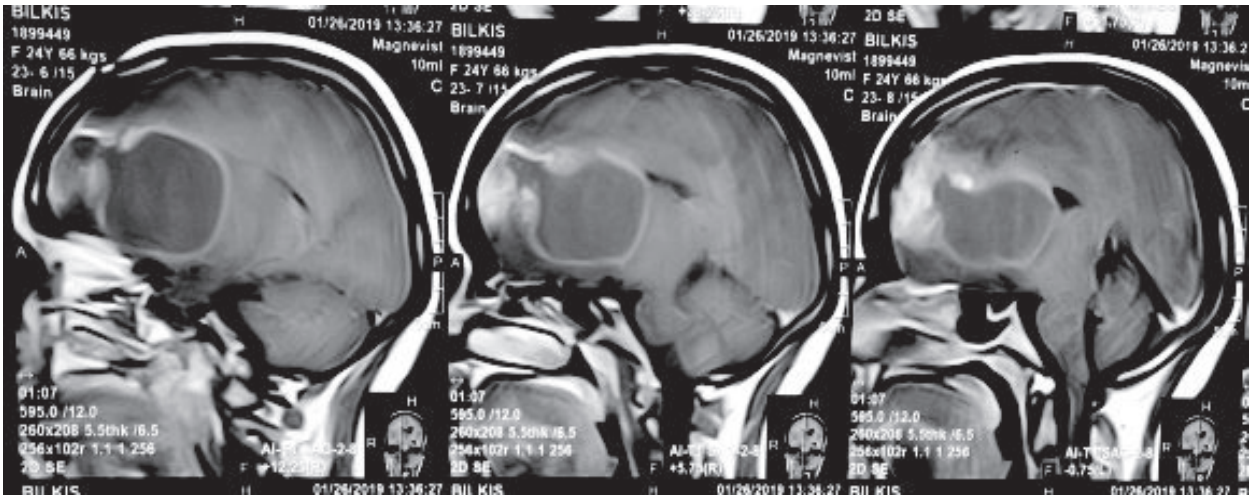

Fig 3: *T1 contrast sagittal image showing heterogeneous enhancement of the mass.*

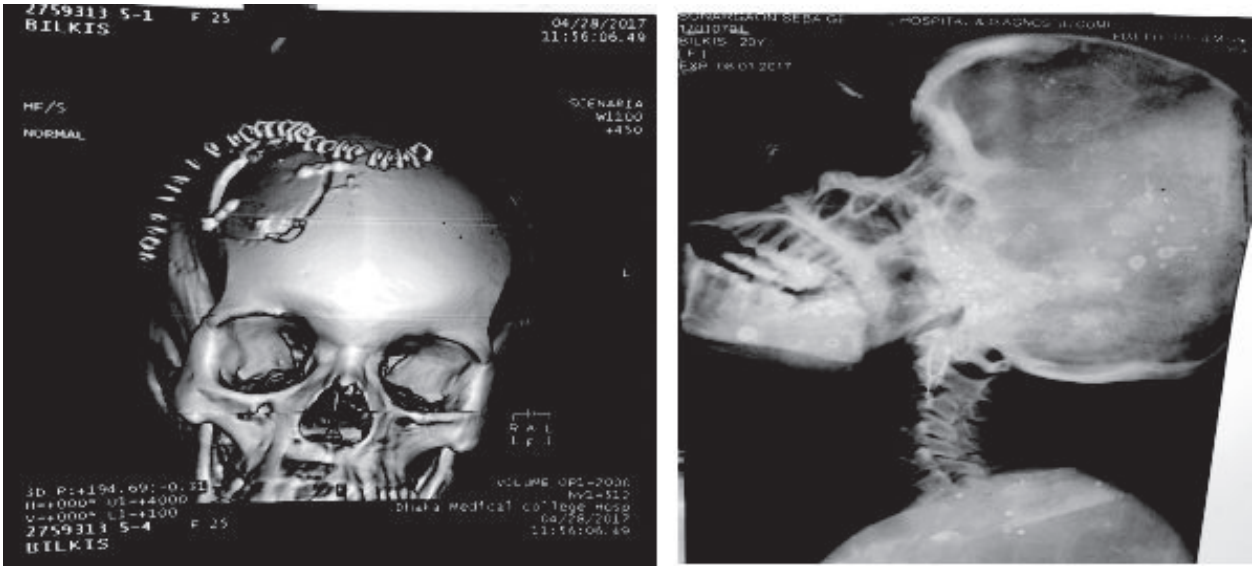

Fig 4: *Postoperative reconstructive bone window & Pre-operative X-ray of neck lateal view*

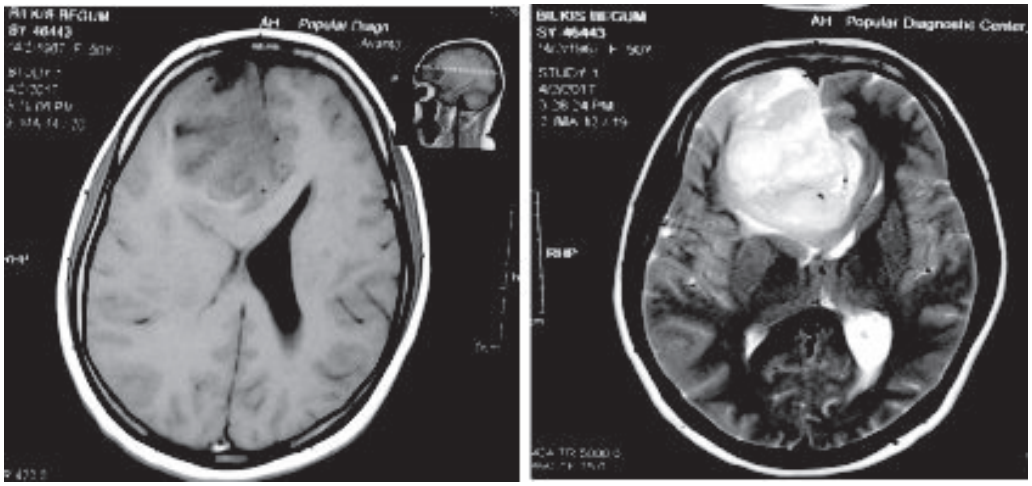

Fig.-5: *Previous lesion (02 years back) having T1 hypo and T2 hyperintensity at right frontal region*

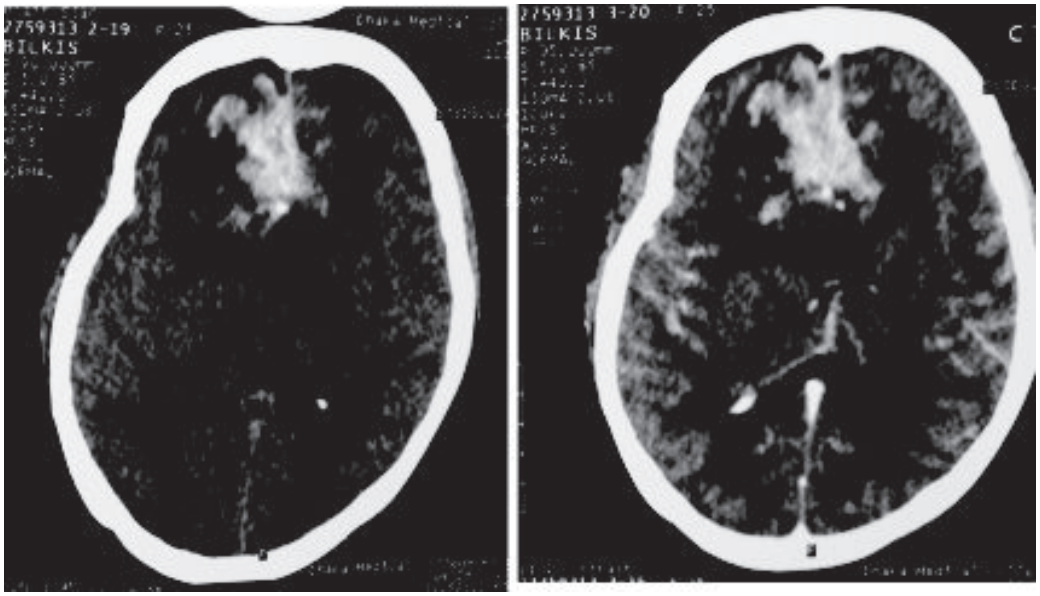

Fig.-6: *NECT & CECT of previous lesion (02 years back)*

Discussion:

Oligoastrocytoma is a mixed variety of oligodendroglioma, consisting mixture of Oligodendroglioma with neoplastically transformed astrocytes[1]. Historically these tumors have been encountered commonly in some institutions, in some instances accounting for 50% of all oligodendrogliomas and is considered the third most common glial neoplasm. Oligoastrocytomas are part of the glial cell continuum that includes both astrocytic and oligodendrocytic components. Based on the World Health Organization (WHO) classification, these tumors are graded as either low grade (WHO grade II) or high grade anaplastic (WHO grade III) types. The anaplastic oligoastrocytoma exhibits histologic characteristics indicative of malignancy, including high cellularity, cellular pleomorphism, nuclear atypia, and increased mitotic activity. Microvascular proliferation and necrosis may also be present but are not required for the diagnosis[2]. These tumors typically occur in young adults and manifest with partial or generalized seizures[3]. Although less common, patients may present with headaches or may have no symptoms at all[4]. Oligoastrocytomas most commonly present either with partial or with generalized seizures. Most oligoastrocytomas occur in the frontal (57% of cases) or temporal (30%)

lobes.[5] Oligoastrocytomas are WHO-Grade II and anaplastic oligoastro-cytomas are WHO Grade III. Favorable prognostic factors include age at presentation of less than 40 years, lower grade of tumor, and better extent of resection[6]. Grading of tumor appears to be the most significant prognostic factor[7].

Initial radiologic evaluation of patients with a suspected intracranial mass is usually performed with unenhanced CT of the head. On CT scans, oligoastrocytomas typically appear as intra-axial low-attenuation regions with little to no associated edema. Because of their slow growth, the associated mass effect of these tumors tends to be less severe compared with that of similar high-grade lesions[8]. Further evaluation with MR imaging typically reveals a lesion that is hypointense on T1-weighted images and hyperintense on T2-weighted images. Contrast enhancement is present in approximately half of the oligoastrocytoma cases in a series by Shaw et al[9].

A median survival time of 6.3 years as well as 5- and 10-year survival rates of 58% and 32%, respectively, have been reported by Shaw et al[9]. Factors associated with longer survival include younger age at operation, total resection of the tumor, and postoperative radiation therapy[2,9].

Oligodendrogliomas tend to be chemo-sensitive and therefore may be treated with adjuvant chemotherapy. Conversely, astrocytomas are not chemo-sensitive. Oligoastrocytomas, in comparison with oligodendrogliomas, respond less favorably to chemotherapy, which is most likely because of the chemoresistance of their astrocytic component [4,10,11].

Histologically distinguishing pure oligodendrogliomas from the other gliomas assists in determining if chemotherapy may be an effective treatment. A characteristic gene alteration — allelic loss of chromosomes 1p and 19q—may help to identify an oligodendroglial component[3,11]. In these tumors, some advocate use of chemotherapy after resection to help postpone radiation therapy and its potential neurologic side effects[3,4].

Oligoastroctyomas respond less favourably to chemotherapy due to the chemo-resistance of their astrocytic component[4]. Studies have shown that the standard of care for oligodendroglial tumors that are 1p19q codeleted should be the combination of chemotherapy and radiation therapy[5].

A favorable prognosis is found in those with young age, WHO III, and better extent of resection[3].

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