



## A CASE SERIES OF PSYCHIATRIC MANIFESTATIONS AS THE PRESENTING COMPLAINT IN CORPUS CALLOSA GLIOMA: RATIONAL APPROACH, APPROPRIATE REFERRAL AND COLLABORATIVE MANAGEMENT

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### ABSTRACT

Neuropsychiatric symptoms may be the predominant or sometimes the only presenting symptoms in a patient with brain tumors like corpus callosum glioma which can mislead the diagnosis and can affect final outcome. We report three such cases along with review of the literature which is particularly considerate on patients who present with atypical symptoms, refractory psychiatric symptoms with subtle neurological symptomatology requiring neuroimaging, for the presence of a tumour. Careful analysis along with radiological evaluation of such patients is crucial for early diagnosis and further management.

**KEYWORDS :** Corpus callosum glioma, Psychiatric manifestation, Neurological symptoms

### Background:

Intracranial brain tumors with the incidence of psychiatric and behavioural symptoms are a well known phenomenon. The tumors may be primary or secondary<sup>1</sup>.

Primary brain tumours are mostly associated with neurological symptoms which include headaches, seizures, motor and sensory deficits. However, it has been observed that their presentation with mood symptoms are comparatively rare<sup>2</sup>.

Gliomas (World Health Organization [WHO] grade II, III, or IV) are the most common primary malignant brain tumors, with an incidence of six per 100,000<sup>3</sup>. The corpus callosum is the interhemispheric commissure<sup>4</sup>. It has been observed that 3.8% of the gliomas infiltrate white matter structures corresponding to the corpus callosum<sup>5</sup>.

Neuropsychiatric manifestations may be associated in patients with brain tumors, with a variety of symptoms, with other physical or neurological signs. It may also be the primary presenting symptoms in few of the patients. This series aims to identify underlying corpus callosal glioma in a group of patients with first episode depression and psychotic symptoms. Analysis of this case series helps in understanding of the rational approach, appropriate referral and collaborative management.

### Cases

#### Case 1:

52 year old female patient presented to psychiatry OPD with complaints of low mood, anergia, anhedonia, crying spells, decreased social interaction, disturbed sleep, apathy, feeling dull at all times, loss of appetite, significant loss of weight, with easy fatigability and generalized weakness since the past 4 months. She was diagnosed as severe depression without psychotic symptoms. She was started on SSRI initially, sertraline 25mg and gradually increased to 150mg, however showed poor response.

After 2 months she further complained of occipital headache and abulia. On neurological examination she was found to have unsteady gait. On MRI (Image 1,2,3) it was reported that she had ill-defined intra-axial necrotic peripherally enhancing SOL in the left postero-medial temporal lobe, inferior parietal with extension to the splenium of the corpus callosum crossing the midline producing mass effect, suggestive of neoplastic SOL and high grade glioma. The patient was referred to neurosurgery. Patient underwent pre operative assessment and microsurgical excision of the tumor. Post operatively patient improved remarkably and her histopathology report was anaplastic oligodendroglioma. Patient was discharged on post operative day 6 with advice to undergo adjuvant chemoradiotherapy.

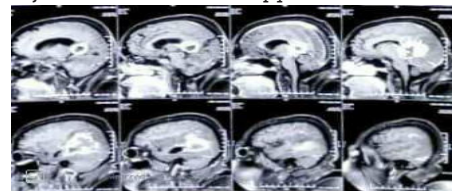


Image (1.) - Saggittal Section Post Contrast T1 Weighted Image

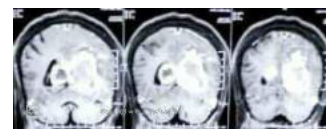


Image (2.) - Coronal Section Post Contrast T1 Weighted Image

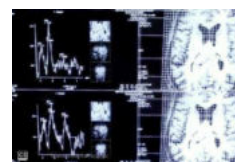


Image (3.) Mr Spectroscopic Image

**Case 2:**

60 year old male patient presented to psychiatry OPD with complaints of irritability, anger outbursts, low mood, low energy, decreased social interaction, disturbed sleep, loss of appetite, significant loss of weight since the past 3 months. He was diagnosed as severe depression with agitation. He was started on SSRI initially, fluoxetine 20mg and gradually increased to 40mg, with low dose haloperidol of 2.5mg for agitation.

However it was noted that he developed severe EPS and showed poor response. On neurological examination he was found to have ataxic gait. On MRI it was reported that he had well defined lobulated mass lesion in the splenium of the bilateral corpus callosum extend into the body anteriorly and to the left occipital lobe posteriorly. The patient was referred to neurosurgery. As the tumor was densely attached with the deep venous structures, only surgical decompression was done along with tissue biopsy obtained via interhemispheric transcallosal approach. Histopathological examination report was suggestive of Glioblastoma Multiforme. Post operatively patient was doing well without any major neurological deficit and discharged satisfactorily on post operative day 7 with advice to undergo adjuvant chemoradiotherapy.

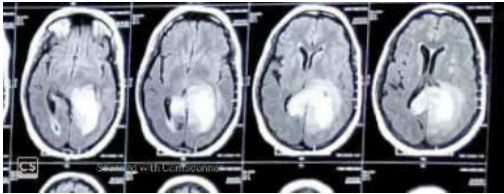


Image (4.) - T2 Weighted Flair Image

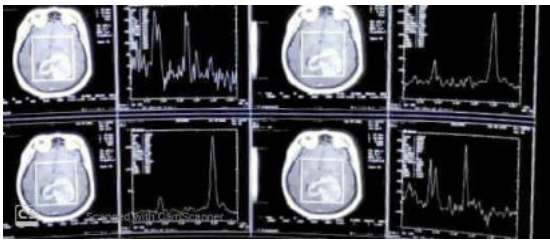


Image (5.) - Mr Spectroscopic

**Case 3:**

43 year old female patient presented to psychiatry OPD with complaints of low mood, insomnia, feeling dull at all times, with easy fatigability since the past 3 years. She also complained of palpitations and a feeling of impending doom. She was diagnosed as mixed anxiety depression. Over the past years she was tried on multiple anti-depressants and she consulted multiple psychiatrists, however showed poor response. She complained of left temporal headache. On MRI it was reported that she had well defined SOL involving the anterior part of the corpus callosum and the left temporal lobe suggestive of glioma. The patient was referred to neurosurgery. After pre-operative assessment, microsurgical excision of the tumor was done. Post operatively patient improved and her histopathology report was high grade glioma. Patient was discharged on post operative day 7 with advice to undergo adjuvant chemoradiotherapy.

**DISCUSSION:**

With the progression of the tumour various neurobehavioural, neuropsychiatric and cognitive symptoms emerge depending on the size and location of the tumour. It was reported by Moise D et al in 2006 that gliomas located in the corpus callosum can produce cognitive changes as well as neurological signs as the tumour progresses<sup>6</sup>.

It has been noted that subtle and atypical neuropsychiatric manifestations may prevail early in the course of tumour expansion<sup>7</sup>. In the above cases it was the psychiatric manifestations which was the defining symptom in the patients.

It was been reported in an article by Leo et al in 2020 that depression is the primary psychiatric symptom manifestation of the underlying GBM in 62% of the cases<sup>8</sup>.

Tumors of the corpus callosum have been associated with significant depression<sup>8</sup>, apathy, and psychotic symptoms<sup>9</sup>. Glial tumor in the left temporal lobe extending to the limbic structures and corpus callosum presenting with symptoms of anxiety and depression was noted in a case report in 2011 by Betul O et al<sup>10</sup>.

In a case report by Yapıcı-Eser et al in 2016 an atypical presentation of GBM located in posterior corpus callosum was noted where the patient presented with depressive symptoms and visual memory deficits<sup>11</sup>.

Munjal S et al in 2016 reported an atypical presentation of psychotic like symptoms of GBM with disorganized behaviour, with obsessions and compulsions, flat affect, worsening depression with gait changes and urinary incontinence in a patient. On CT a mass in the frontal lobe around the corpus callosum accompanied by edema and mass effect on the frontal horns and anterior body of the right lateral ventricle was noted<sup>12</sup>.

Reich M et al<sup>13</sup> in 2012 reported Cotard syndrome in a patient with inoperable glioblastoma multiforme on the splenium of the corpus callosum.

In another case report in 2007 by Arora et al, catatonia was reported with a butterfly glioma originating from the corpus callosum with bilateral medial frontal extensions<sup>14</sup>.

The understanding of corpus callosum gliomas and mood disorders may be attributed to the involvement of adjacent structures in like the frontal lobes, deep midline and limbic structures<sup>9</sup>, or the involvement of the various parts of the corpus callosum like the rostrum and the splenium<sup>15</sup>.

Disorders of inter-hemispheric integration, transmission, and communication may also be responsible for psychiatric symptoms ranging from affective to psychotic symptoms<sup>16</sup>.

Patients with brain tumours, even in the lack of visible neurological signs, may demonstrate neurocognitive impairments in different domains. Especially in the early stages of the disease, neurocognitive impairment are noted to be subtle and may hence be under diagnosed or even attributed to a psychiatric disorder<sup>7</sup>.

Prompt assessment, rational approach, referral, appropriate tests and imaging, and early diagnosis during this stage may improve the prognosis and the increase the survival rate of the patient.

**CONCLUSION:**

Brain tumors like corpus callosum glioma can be silent neurologically and may present only with non specific psychiatric symptoms, which may lead to misdiagnosis as a genuine psychiatric disorder. This may delay the establishment of the primary causative diagnosis, which in turn may lead to delayed treatment and poorer prognosis. In this article we emphasize the value of subtle manifestations of a patient with first episode psychiatric disorders with emphasis on history, clinical examination and neuroimaging,

regardless of the presence or absence of neurological symptoms.

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