

# Brain Tumor and Psychiatric Manifestations: A Case Report and Brief Review

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*Brain tumors may present multiple psychiatric symptoms such as depression, personality change, abulia, auditory and visual hallucinations, mania, panic attacks, or amnesia. A case of a 79-year-old woman who presented with depressive symptoms but showed minimal neurological signs and symptoms is discussed. Neuroimaging revealed a brain tumor in the left parietal lobe, and patient underwent neurosurgical treatment and subsequently received chemotherapy and radiation. Some patients with neurologically silent brain tumors may present with psychiatric symptoms only. Therefore, we emphasize the consideration of neuroimaging in patients with a change in mental status regardless of a lack of neurological symptoms.*

## BACKGROUND

Brain tumors may present multiple psychiatric symptoms such as depression, personality change, abulia, auditory and visual hallucinations, mania, panic attacks, or amnesia (1–4). Some patients may show no neurological signs of a brain tumor. Therefore, in some cases, psychiatric symptoms may be the only clue to the presence of a brain tumor (5). A past history of psychiatric symptoms may complicate the emerging neurological picture and delay the diagnosis (6). Any patient 40 years of age or older with a change in mental status, cognitive or emotional, should have neuro-imaging of the brain

(1), particularly if there is no clear alternative etiology. Any patient with a psychiatric presentation who has specific neuro-behavioral or neurologic findings or an unexpectedly poor response to psychopharmacologic treatment should also have brain imaging (1). Neuroimaging is also necessary even in psychiatric patients with apparently “functional” affective illness (7). In this report we describe a patient who presented with depressive symptoms but minimal neurological symptoms and signs and was promptly diagnosed with the help of brain imaging. The patient was able to receive the appropriate treatment, and psychiatric intervention was crucial in facilitating the diagnosis and appropriate treatment. We emphasize the importance of neuroimaging in such cases.

The abstract has been accepted for a poster presentation at the 2004 meeting of the American Association for Geriatric Psychiatry, Baltimore, MD.

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## CASE REPORT

Mrs. B.C., a 79-year-old white separated woman living alone at home, was seen in consultation in a community hospital emergency room because she was complaining of

depression and did not want to be discharged. She had an excellent pre-morbid psychiatric history with denial of affective/psychotic/phobic/obsessive-compulsive/panic disorder features. During the 4–5 months prior to this admission, the patient developed depressive symptoms that were treated by her primary medical physician with paroxetine 20 mg once daily. Patient took the medication for a few weeks only. She had been eating and sleeping poorly and had lost weight. She also had recurrent thoughts of death and fear of dying. Patient was very vague about her symptoms. Her medical history included hepatitis c, psoriasis, asthma, hypertension, and gastroesophageal reflux disorder. She had no history of psychiatric hospitalization or any family history of mental illness. The physical examination and laboratory tests done in the emergency room, including serum chemistry and complete blood count, did not reveal any significant abnormalities, so she was medically cleared for discharge.

On mental status examination, she was depressed, very irritable, angry, and easily agitated. Her mood was very labile. She was not delusional or hallucinating. She was oriented to place and person, but not to time. Her memory was impaired for remote events, and she was unable to make decisions regarding plans for care. Her insight and judgement were impaired. There were no suicidal thoughts or plans. Her Folstein (8) mini mental status examination revealed a score of 22. Her psychiatric diagnoses were major depression—single episode and mild dementia, possibly secondary to Alzheimer's disease or other medical causes. Patient was started on venlafaxine 37.5 mg p.o. twice daily. Patient was transferred to a geriatric inpatient psychiatric unit in a community hospital to further address her psychiatric symptoms. The physical examination done by the internist in the psychiatric unit did not reveal any significant abnormalities. The neurological examination did not reveal any focal deficits. Laboratory tests including complete blood count, thyroid function tests, Vitamin B12 and folate levels, and serological tests for syphilis did not reveal any significant abnormalities. EKG showed a right bundle branch block. Noncontrast computerized tomography (CT) of the head showed a 5 cm left parietal mass with surrounding edema. CT of the head with intravenous contrast confirmed a large solitary enhancing tumor mass of the left parietal lobe with extensive vasogenic edema consistent with a high-grade glioma versus solitary brain metastasis. Neurosurgical and neurological consultations indicated mild (Rt) hemiparesis. Patient initially refused neurosurgical treatment. However, after psychiatric intervention she agreed to this treatment and was transferred to a tertiary care hospital where she underwent craniotomy and partial resection of the left parietal mass. The pathology report indicated high grade glial neoplasm with sporadic cells. The venlafaxine was discontinued postoperatively, as patient did not exhibit any depressive

symptoms, per the psychiatric consult report at the tertiary hospital. Patient subsequently received chemotherapy and radiotherapy.

## DISCUSSION

Various neurological diseases can present as psychiatric disorders. Understanding underlying neuroatomic function helps physicians to localize defects and search for many treatable neurological conditions including brain tumors (9). However, patients may have minimal or no neurological symptoms and signs as in the case presented, and in such cases psychiatric symptoms may be the only clue (2).

Binder described three cases of brain tumor patients who presented with disturbances in behavior or thinking but showed no neurologic symptoms or signs (10). After surgery and removal of brain tumors, psychiatric symptoms tend to abate, as in the case presented. Kohler and Burock reported a case of a 35-year-old woman who presented with various psychiatric disorders but had limited response to psychopharmacological treatment. After treatment of the tumor, her mood stabilized and she was able to pursue work (11). Blackman and Wheler discussed a case in which a 12-year-old boy was diagnosed as having overanxious disorder of childhood and school phobia and was later found to have a cerebral tumor. Surgical removal of the tumor led to an alleviation of the anxiety. Blackman and Wheler stress the danger of attributing physical symptoms to functional illness simply because there are no positive physical findings (12). Thus, as the above cases demonstrate, psychiatric manifestations secondary to brain tumors may span across all age groups from children to adults and the geriatric population.

In patients with previous psychiatric history, the picture is more complicated. Psychiatric patients may not be very verbal about their symptoms. In such cases, neuroimaging becomes especially crucial for facilitating the diagnosis.

Filley and Kleinschmidt-DeMasters have attempted to correlate tumor location with neurobehavioral symptoms. In their case series, patients with frontal lobe tumors presented with abulia, personality change, or depression, whereas those with temporo limbic tumors had auditory and visual hallucinations, mania, panic attacks, or amnesia. After treatment, neurobehavioral symptoms abated in 7 of 8 patients (1). In Wellisch's study, one of the key predictors of major depressive disorder was frontal region of tumor location ( $p = 0.001$ ) (13).

Although a mild hemiparesis was initially missed, even without the presence of neurological deficits, the new onset of depression in a geriatric patient warrants neuroimaging.

While neuroimaging is important in all patients with a change in mental status, it is essential in those without psychiatric history and/or those who do not respond to psychopharmacological treatment.

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