

Cerebral Malignancy Presenting with Post Stroke Depression

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Abstract The following case report highlights about a Glioblastoma presenting with features of post stroke depression. The neuropsychological findings though initially was normal but on subsequent follow up showed gross abnormalities. The imaging studies revealed the tumor, involving the right parietal and temporal lobes with midline shift and high vascularity. The patient exhibited rapid downhill course and died within 4 weeks of initial presentation.

Keywords Glioblastoma · Post-stroke depression · CVA

Introduction

Glioblastoma multiforme (GBM, WHO Grade IV) is the most aggressive type of primary brain tumor in adults, comprising approximately 50% of all gliomas [1]. The prevalence of this tumor is approx. 20% based on population-based studies and peak age of onset is 50–60 years [2]. It is more common in males (1.6:1) [3]. Age is the most important independent prognostic variable at presentation, followed by grade [4]. Unlike other brain tumors, glioblastomas can form in either the gray or white matter of the brain; but most GBM arises from the deep white matter and quickly infiltrates the brain, often becoming very large before producing symptoms. It is a very fast growing tumor with universal fatality [5]. Since the advent of modern imaging facilities, there is increase in reporting of this tumor [6]. MRI is particularly useful in evaluating tumor extension and subacute and chronic hemorrhages. Gadolinium enhancement is almost always present and usually appears ring-like around the tumor with thick, irregular walls. The affected portion of the brain is usually replaced by a single mass that grossly may appear well circumscribed, but

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infiltrates the surrounding parenchyma by coursing along white matter tracts, often spreading to the opposite hemisphere via the corpus callosum (“butterfly lesion”). Almost all of the high-grade gliomas occur sporadically. Tumor may encompass different lobes most commonly in frontal and temporal regions and involvement of spinal cord, brainstem, third ventricle, and cerebellum is rare. Rapidly growing tumors are responsible for acute psychiatric symptoms and slow growing tumors often present with personality changes, apathy, and depression [7].

Case History

A 65-year-old male was referred to department of Psychiatry from department of General Medicine with features of withdrawn behavior, affective disturbances and forgetfulness. He had an attack of cerebrovascular accident in the past and had been admitted this time with a fresh episode of CVA.

He had complained of low mood, lack of interest, and loss of energy, inability to manage his routine day to day work, markedly decreased appetite and sleep for past 3 weeks. He had lost 7.5 kg weight during this period. According to his spouse and daughter, he had developed these symptoms abruptly and within few weeks his symptoms became incapacitating making him almost bedridden. He had difficulty to keep record of monetary transactions. There was no history of headache, vomiting, seizure or loss of consciousness. Patient had a long-standing history of hypertension and diabetes. There was no history of similar kind of illness in the family. The neurological examinations findings were the presence of left sided coarse tremor (10–12 Hz), but there was no rigidity, dystonia or clumsy movements. The power was grade 2/5 on the left side and 5/5 on the right side in both upper and lower limbs as per MRC grading system. All the jerks and reflexes were normal. The sensations were intact. There was no abnormality detected in the fundoscopic examination. The cerebellar signs were absent. Primitive reflexes like contralateral grasp reflex, glabellar tap, palmomental reflexes were also absent.

He was a right-handed person. He failed to perform following commands like how to salute or to comb hair. He also was unable to show how to light a candle or how to brush the teeth. He failed miserably when he was asked to draw intersecting pentagon. He could not wear his shirt properly after it was removed. The clock face drawing had revealed crowding of letters outside a circle. There was no visual field defect and he could perform simple arithmetic calculation. There was no contralateral neglect. On Mental Status Examination, the affect was found to be labile with episodic behavioral dyscontrol, intermittent and irritability. Mood was depressed. His predominant thought content was the worry about own health. There was no delusion or perceptual disturbances. The tests of language functions showed no evidence of dysphasia, but the performance was poor in tests of verbal fluency (more on the ‘FAS’ test than the Category test). Immediate and recent memory was impaired. He recalled successfully two out of four unrelated objects and cue did not improve the performance. His forward digit span was four and backward digit span was three. The remote memory, both in historical and personal facts were intact. When he was examined initially he was found to be depressed and no psychotic processes could be elicited. He had been advised for neuroimaging urgently preferably an MRI but due to cost factor this could not be done. Though the CT picture had revealed midline shift in absence of edema, all the other symptoms and signs were indicative of post stroke depression. The provisional diagnosis was made as Depression due to Ischaemic CVA and he had been prescribed Tab Sertraline (100 mg OD) along with Aspirin (150 mg OD), Clopidogrel (75 mg OD), and Atorvastatine (10 mg before dinner). Patient was instructed

to attend OPD after 1 week for follow-up. During his next visit the family members of the patient had complained about some new abnormal behavior. On examination, the patient was found to be lethargic and having memory impairment. Based on these recently appeared features it was thought that either the patient had a fresh attack of CVA or that earlier CT scan mass was a cerebral SOL (space occupying lesion) which compressed and

Fig. 1 T₁-MRI showing shift of midline structures with peritumoral edema and contrast enhancement

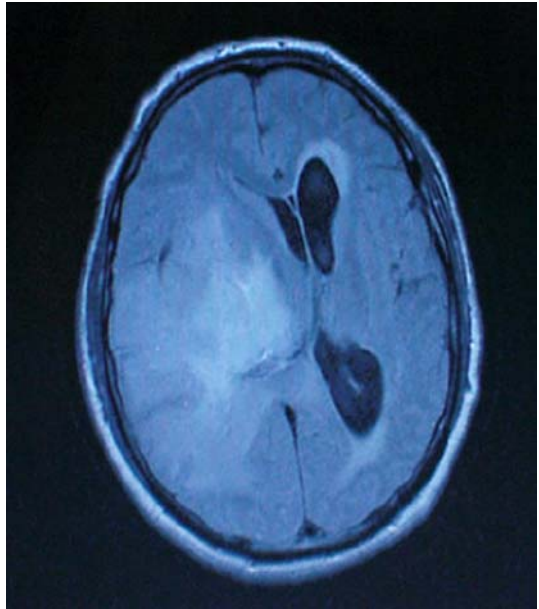
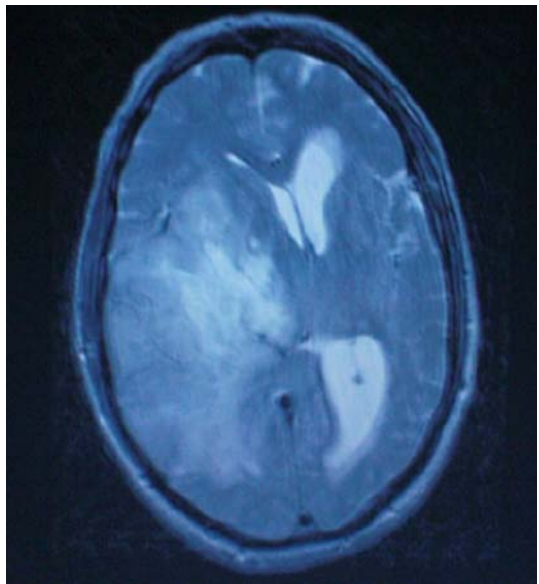


Fig. 2 T₂-MRI illustrates a large tumor deep within the right cerebral hemisphere and extending through the corpus callosum to the left hemisphere



caused mass effects with features of involvement of right parietal and temporal lobe. So a MRI of brain was ordered to confirm his diagnosis. The MRI showed a large heterogeneous tumor arising from right temporal and parietal lobe and involving most parts of right MCA territory. This tumor was found to compress the ventricular system and caused the midline shift. Subsequently there was compression and edema of upper brain stem with pressure and stretching of upper cerebral peduncle in the later part of his illness. MR angiography had showed engorgement of vasculature in the right MCA territory as well as highly vascular tumor mass. The presumptive diagnosis of glioblastoma multiforme was proved to be correct, when histopathology report was received from post mortem after the patients death. This variegated appearance was helpful to distinguish glioblastoma from the anaplastic astrocytomas. After the MRI was done the patient had a rapid downhill course. He became drowsy and later unconscious, showed Cheyne-Stokes breathing and died within 2 weeks (Figs. 1–7).

Fig. 3 Sagittal image of tumor with variegated heterogenous appearance of the tumor

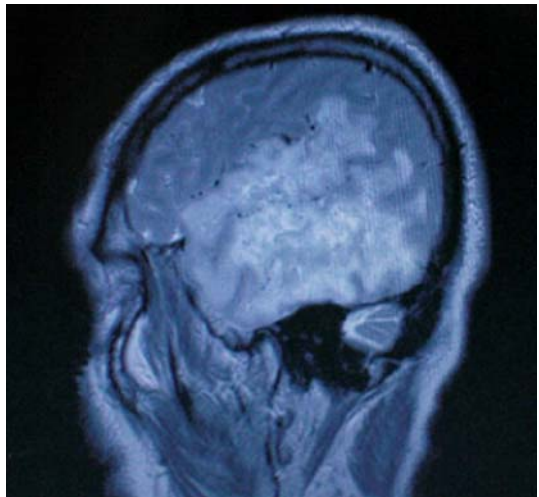


Fig. 4 Brain stem compression and edema in advanced stage

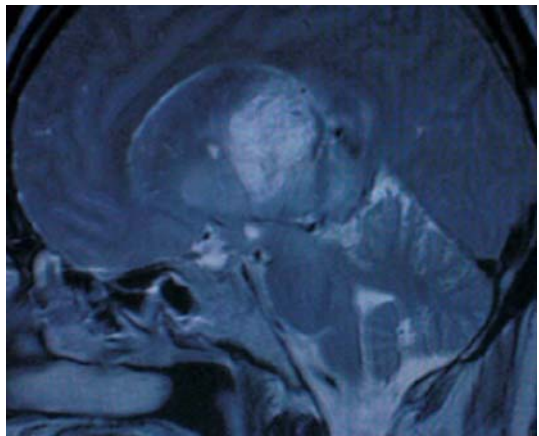


Fig. 5 Coronal view of tumor T₂ image shows hemorrhage within the tumor

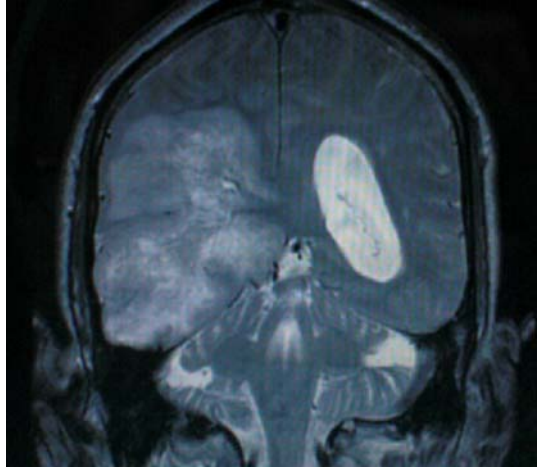


Fig. 6 MR angiography showing engorgement of right middle cerebral artery

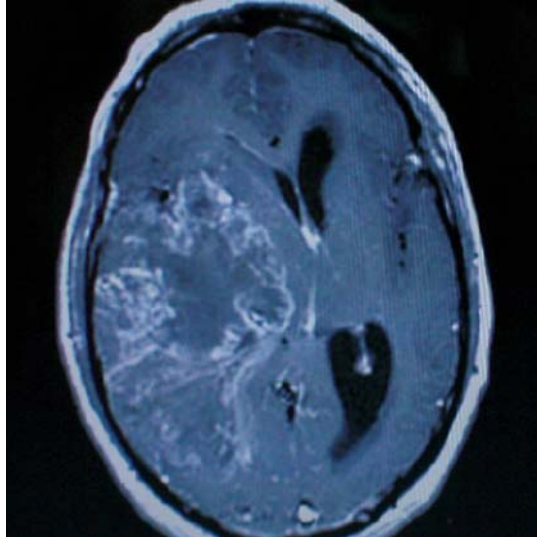


Discussion

The behavioral dysfunction and psychiatric symptoms is common with glioblastoma multiforme. In general parietal lobe tumors are “silent” with respect to psychiatric symptoms [8]. The affective symptoms in these patients are predominantly depression and apathy. The case studies also reported mania in patients with right parietal tumors. Small series has supported the belief that depression is more common with frontal lobe tumors and psychosis with temporal lobe tumors [9]. The most common direct cause of death is hemorrhage in the tumor [10].

In this case, the neuropsychological test findings were suggestive of involvement of non-dominant (right) parietal lobe involvement (as the patient had ideomotor, ideational, constructional, and dressing apraxias). Absence of primitive reflexes, motor perseveration or impersistence, and working memory deficit ruled out frontal lobe pathology. The left

Fig. 7 High vascularity pattern of the tumor



sided coarse tremor can be explained by involvement of the right sided basal ganglia structure with exuberant growth of the tumor. Despite the involvement of non-dominant parietal lobe, there was no anosognosia or neglect syndrome.

We, the clinicians, get many geriatric cases with family members bring the patients to us with advanced dementia, and fall in trap of therapeutic nihilism. Most often, after assessing the mental state and cognitive functions we come into conclusion that the patient is suffering from Dementia and abnormal behavior the patient exhibited is probably a part of BPSD (Behavioural and Psychological symptoms of Dementia). This tumor apparently mimicked the manifestations of post stroke depression in a subject who had high chance of having a vascular event thus posing a diagnostic dilemma. The progress of the tumor was so rapid that his cognitive functioning and reports of Neuropsychological testing varied dramatically within a span of few weeks only.

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