

*Research Article***Surgical management of Brain Tumors Apoplexy****Ahmed M. Moawad (M.D)**

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Abstract

This work included 20 patients with stroke-like presentation of brain tumors due to hemorrhage within such tumors. The study included the clinical presentations. Computed Tomographic diagnosis, and appropriate surgical treatment and outcome. They were 11 males (55%) and 9 females (45%). Their age ranged between 40 and 78 years with a mean of 52+1-7 years. The commonest clinical presentation in our patients was disturbed consciousness in 60%, visual disturbance in 40%, hemiparesis in 30% and hemiplegia in 20%. On CT-examination, high attenuated densities (recent hemorrhage) were encountered within all masses included in the current study in the form of bizarre-shaped densities in the center of the mass in 85% of patients and at the periphery in the remaining 15%. Single mass lesion was encountered in 16 patients (80%) and multiple masses in 20%. All cases were subjected to appropriate craniotomy and the specimens (hematoma-tumour tissue) evacuated at surgery were subjected to histopathological examination According to the final pathological diagnosis, gliomas were diagnosed in 45%. meningiomas in 35% and metastasis in 20%. Immediate outcome after surgery was excellent in 60% of cases, good in 25% fair in 10% and poor in 5%. This study concluded that the differentiation between true cerebrovascular stroke and stroke-like presentations of brain tumors is basically a neuro-imaging job achieved in this research using Computed Tomography, since the clinical differentiation is difficult.

Key Words: brain tumors, hemorrhage, Tomographic diagnosis**Introduction**

The cerebrovascular disease is the third leading cause of morbidity and mortality in the United States, primarily affecting the elderly populations^[1]. The entity of stroke-mimicking conditions although it represents only 1.99% of patients with true stroke, it deserves special attention because the line of treatment and potential risk is totally different^[2]. It was found that 2/3 of these stroke-mimicking conditions are due to primary or secondary brain tumors^[2,3]. The development of hemorrhage in these tumors was responsible for the stroke-like presentation and in most patients this was the first presentation for these unsuspected neoplasms^[4]. Based on the clinical data, it is often difficult to distinguish these patients with stroke-like conditions from those with spontaneous intracerebral hemorrhage due to other factors, and it is basically an imaging diagnosis in most cases^[3]. Neuro-imaging techniques fail in some cases to point to the presence of tumor hidden by the cerebral hemorrhage^[4].

The neurosurgeon has to deal with stroke-like presentation of brain tumors as acute intracerebral hematoma. The relieve of the mass effect, hence the treatment of increased intracranial tension whatever the offending cause or pathology is a life saving measure especially with patients presenting with acute neurologic deterioration⁽⁵⁾.

Aim of the Work

The aim of this work was to present an experience in patients with stroke-like presentation of brain tumors due to hemorrhage within such tumors. The study included the clinical presentations. Computed Tomographic provisional diagnosis, appropriate surgical treatment and outcome.

Materials and Methods

This study included 20 patients who presented to the Neurosurgery Department, Faculty of Medicine during the period between March 2011 to March 2014 with

stroke-like conditions. Imaging revealed that those presentations were due to hemorrhage within pre-existing brain tumors. The studied patients represent 2.2 % of patients presented with true stroke during the research period, who were excluded from the study.

Supratentorial lesions were selected excluding pituitary apoplexy. All were subjected to the following:

- (1) Thorough history taking, and neurological examination.
- (2) Cranial CT-study before and after IV contrast some patients had MRI at the time of admission.
- (3) Operative interference:

All cases were subjected to craniotomy on emergency basis with evacuation of the hemtoma and the underlying tumor tissue.

(4) All specimens were sent to histopathological examination.

Results

This study included 20 patients with stroke-like presentations of brain tumors; they were 11 males (55%) and 9 females (45%). Their age ranged between 40 and 78 years with a mean of $52 \pm 1-7$ years. It was noticed that, the predominance of occurrence was at and above the 4 decade in table I.

Table I: Age and sex distribution in the studied patients

Age	Sex	
	Male	Female
0 - 20	1	-
20 - 40	-	3
above 40	10	6

The different initial acute clinical presentations in the studied 20 patients are presented in Table II.

Table II: The initial acute clinical presentations in the studied patients

Clinical presentations	No.	%
-Disturbed consciousness	12	60
-Visual disturbance	8	40
-Hemiparesis	6	30
-Hemiplegia	4	20
-Headache	9	45
-Seizures	3	15

Table III shows the site of the brain lesions according to CT examination. The commonest site of lesion in the studied

cases was the temporo parietal (8 cases) followed by temporo-occipital (5 cases), with the least to occur at the occipital lobe in one patient.

Table III: Site of the brain lesions according to CT-examination.

Site of the lesion	No. of cases
Temporo-parietal	8
Temporo-occipital	5
Frontal	3
Parietal	3
Occipital	1

Table IV shows the different CT features in our 20 patients. Single mass lesion was encountered in 16 patients (80%). High-attenuated densities (recent hemorrhage) were encountered within all masses included in the current study in the form of bizarre-shaped

densities in the center of the mass in 85% of patients and at the periphery in the remaining 15%. The occurrence of recent bleeding within the unsuspected brain tumors was regarded the cause for signs of acute presentations in this study.

Table IV: Different CT features in the studied patients

CT features	No. of cases	%
• Single mass lesion	16	80
• Multiple mass lesions	4	20
• Cystic changes within the mass	12	60
• Patchy high attenuated Densities (blood):		
- at the center	17	85
- at the periphery	3	15
• Surrounding perifocal edema		
- Grade I	2	10
- Grade II	14	70
- Grade III	4	20
• Mass effect on near-by structures	16	80
• Dilated (obstructed) ventricular system	9	45
• Post FV -contrast enhancement		
- At the center	15	75
- At the periphery.	5	25

N.B. More than one feature was present in each patient.

The operative findings were summarized in table V; all cases (100%) were subjected to appropriate craniotomy. Cortical incision was needed in 10 cases (50%), while no

cortical incision was needed for surfacing tumors in 10 cases (50%), 7 cases of which were meningiomas, one case of melanoma and two cases of glioblastoma.

Table V: The operative findings in the studied patients.

Operative findings.	No.	%
• Grossly apparent tumor tissue with hematoma within.	7	35
• Apparent tumor tissue intermingled with hematoma	5	25
• Hematoma surrounding or adjacent to tumor tissue	5	25
• No apparent tumor tissue.	3	15
• Distribution of brain tumors:		
• Cortical	10	50
• Subcortical	10	50

Table VI: Final pathological diagnosis in the studied patients

Pathological diagnosis	No.	%
Meningiomas	7	35
Low-grade astrocytoma	4	20
Glioblastoma multiform	3	15
Metastasis from bronchial carcinoma	3	15
Oligodendroglioma	2	10
Metastasis from malignant melanoma	1	5

Table VII: Immediate outcome following surgery

Outcome	No.	%
Excellent	12	60
Good	5	25
Fair	2	10
Poor	1	5

Post-operative outcome was summarized in table VII. Excellent results were achieved when surgery was done promptly for progressive deterioration of the level of consciousness (12 cases). Good results were

achieved as regard the relief of headache, seizures and improvement of hemiparesis. However visual field defect was persistent in 8 cases. Unfortunately one patient died because of acute myocardial infarction.

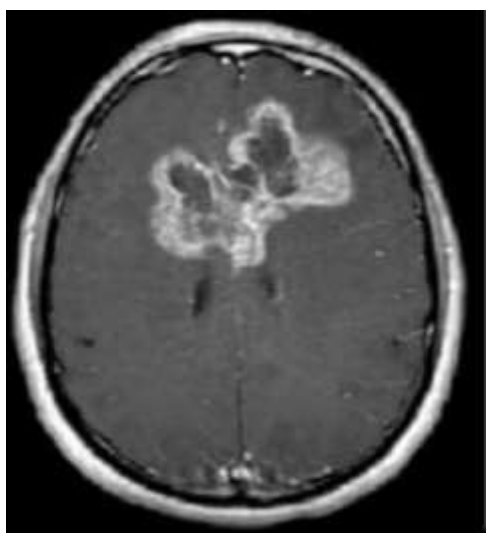


Figure (1): MRI Showing Hge inside glioblastoma multiform

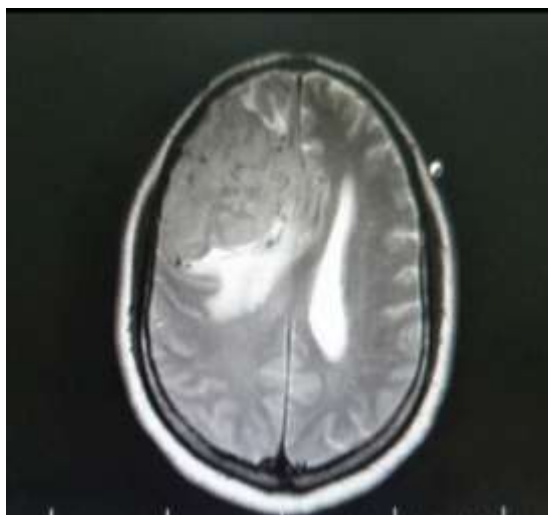


Figure (2): MRI Showing Hge inside frotal brain tumoer

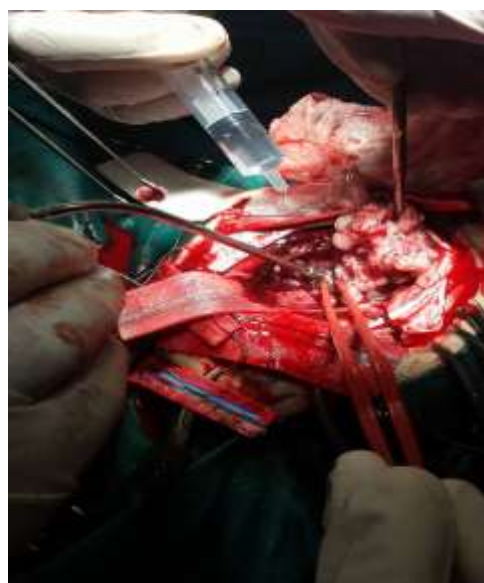


Figure (3): Evacuation of hge

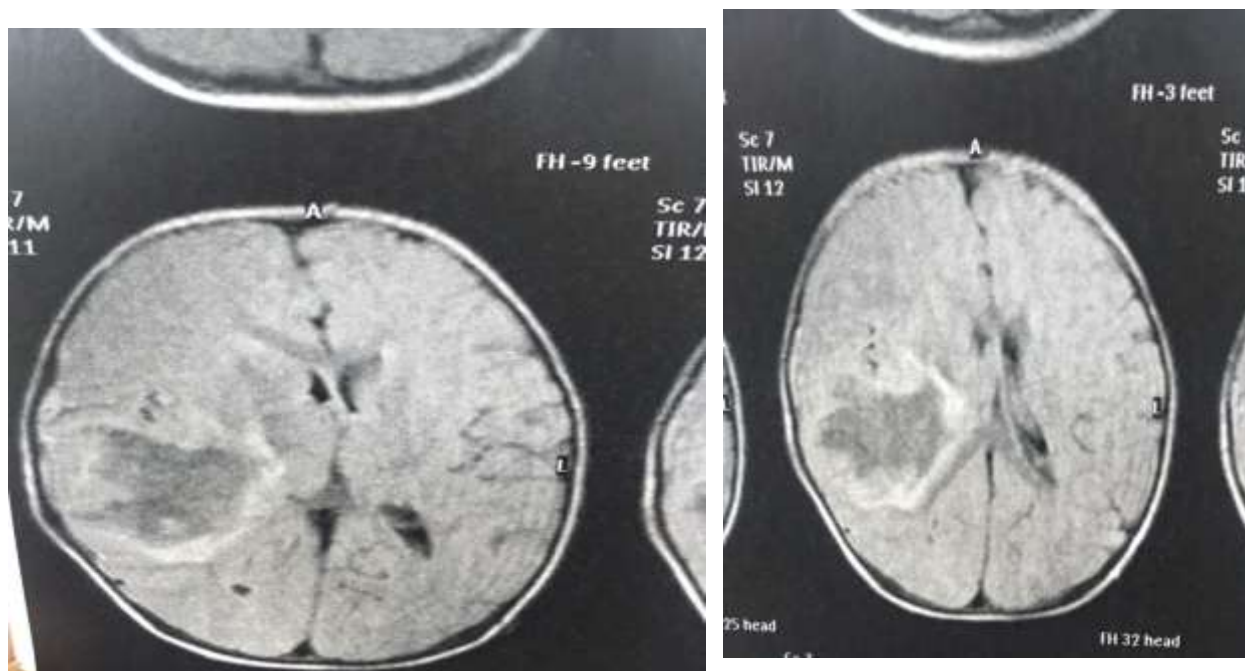


Figure 4 : MRI Showing Hge inside temporo parietal tumor

Discussion

The occurrence of hemorrhage in brain tumors leads to the unusual acute stroke-like presentation of such tumors. This study included 20 patients with acute presentation (stroke-like) of symptoms that proved on subsequent CT study and pathological examination of the specimens to be due to brain tumor.

Most of our patients had their ages ranging between 40 and 78 years, that matches the age incidence mentioned in the literature [3,6,7,8].

The clinical presentations in our patients are rather of acute neurologic deterioration in consciousness, developing hemiparesis, and visual disturbance, these features agree with the literature^[9,10,11,12], Weisberg^[13] reported in his study of 20 patients the predominance of seizures in 11 patients, in our study, we found only three cases presenting with fits, this could be due to the fact that in the study of Weisberg all cases were exclusively metastatic tumors, while in our study, metastatic tumors were only 4 patients.

Many authors^[2,3,4,7,9] had mentioned similar lists of acute presentations of brain tumors

that encountered with inability to differentiate between stroke and stroke-like conditions based on clinical background. In the work of Garcia et al.,^[2] they could expect whether it was a true stroke or not from some of the clinical presentations. In this research, our main aim was not the clinical expectation of the presence of brain tumors hidden by the acute presentations, but was dealing with neurological emergency based on neuro-imaging.

In our study, wide array of brain tumors show the affinity for spontaneous hemorrhage, meningiomas (35%). Metastatic lesions (20%) and low grade gliomas (20%). Mandybur TI^[14] and Bitoh et al.,^[15] have pointed out the increased occurrence of tumor apoplexy with metastatic tumors.

Computed Tomography (CT) was the first imaging modality to be done for those patients with such acute presentations being accurate, not time consuming and not expensive compared to MRI study. The same policy was adopted by other authors^[3,4,6,8], although other studies^[10,11,12] had reported using both CT and MRI studies.

A variety of CT features were encountered in our patients who presented with stroke-

like conditions. The initial CT study could demonstrate the presence of original mass with hemorrhagic densities within in all our patients confirming its sensitivity to detect such conditions. This finding coincides with the published literature^[8,9,10,13,14] who could diagnose the presence of mass lesion by CT study at the initial presentation either primary or secondary brain tumors.

A group of CT findings were described by Weisberg et al., and Mandybur TI^[13,14] to suggest the presence of underlying mass lesion in association with the presenting hemorrhage including:

- Atypical location of the hemorrhage.
- Non-homogenous high density at the margin, sometimes ring-like appearance.
- Surrounding massive oedema.
- Positive post-contrast enhancement.

However, in the work of Jellema et al.,^[3] and Takahashi et al.,^[10] they described some of their patients with acute presentations with the initial imaging of CT and MRI revealed the presence of hemorrhagic brain lesions that were considered to be primary, while the follow up studies on later deterioration of the patients revealed the presence of underlying mass lesion masked by the acute presentation of the hemorrhage. Frosting et al.,^[11] mentioned that on MRI study, there was no difference between primary in-tracerebral hemorrhage and hemorrhage within mass lesion; both show the same pattern of evolution. Some authors in the investigation of brain tumor presenting like stroke had found meningeal spread from the original masses (heptomeningeal carcinomatosis) of which Moonis et al.,^[6] who used brain CT only, while Mandybur TI stated that Brain MR! study with Gd-DTPA together can demonstrate meningeal spread of tumors, not by CT study. In our work, we did not meet cases with such meningeal spread.

Establishment of the diagnosis in patients presenting like stroke is necessary to start proper line of treatment because the two entities namely true hemorrhagic stroke and stroke-like conditions have totally different line of treatment^[3,4,5,14], another factor adds to the importance of this diagnosis is the experience described by Okuno et al.,^[15]

with a rare case of hemorrhagic glioblastoma disseminated into the cervical cord, they noted that the occurrence of hemorrhage within glioblastoma makes it at risk for dissemination.

Conclusion

This study concluded that the differentiation between true cerebrovascular stroke and stroke-like presentations of brain tumors is basically a combined job of neuro-imaging and operative finding which is further confirmed by the histopathological examination, since the clinical differentiation alone is difficult. The presumptive diagnosis of brain tumour apoplexy should be put in mind where a preoperative diagnosis can not be achieved.

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