

## Case Report

# Seven patients diagnosed as intracranial hemorrhage combined with intracranial tumor: case description and literature review

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**Abstract:** In the present study, 7 patients with brain hemorrhage combined with intracranial tumor were investigated for about 3 years. Furthermore, the previous reports related with such cases were also reviewed. In all of these patients, hemorrhage was a main characteristic of the diagnosed neoplasm. The clinical data were identified by computed tomography (CT) scanning in the present study. CT scanning results demonstrated that there was a neoplastic core with high or low density and multifocal clots generally at the borders of the tumors. Increase of tumor tissues with intravenous injection of approximate 70% hypaque was analyzed in all the 7 patients with brain hemorrhage. The parts that were increased showed peripheral distributions corresponding to the hemorrhage sites. In conclusion, the intracranial brain hemorrhage related with the several types of tumors, including hemangiopericytoma, metastatic carcinomas, oligodendroglioma, and glioblastoma multiforme, which may be helpful to these patients.

**Keywords:** Brain hemorrhage, intracranial tumor, diagnosis, literature review

### Introduction

It has been demonstrated that there were about 15% idiopathic brain hemorrhage accounts in all the strokes [1-3]. In comparison with other diseases, the incidence of brain hemorrhage has been increasing. Hypertension was about 50% reasons of the brain hemorrhages. Furthermore, other reasons that were responsible for the brain hemorrhage were mostly tumors, inflammatory and degenerative vasculopathies, and iatrogenic disorders of coagulation aneurysms and vascular malformations [4, 5]. However, there were unknown reasons that might accounts for the pathogenesis.

Brain hemorrhage induced by hypertension usually occurred in the hemispheres, the cerebellum deep gray nuclei, and results in respect to specific clinical syndromes relying on locations of tumors [6]. Computerized tomography (CT) has made great progress on the diagnosis

and detection of brain hemorrhage. In the present investigation, CT was also used to detect and diagnose brain hemorrhage.

### Pathogenesis analysis in patients

In bleeding from tumors, metastatic tumors were more than in primary tumors. In metastatic tumors, to lung cancer, melanoma, gastric cancer is the most common tumor and velvet, in addition, ovarian cancer and liver cancer and prostate cancer. In the hemorrhage of primary intracranial tumor in glioblastoma and oligodendroglioma is most common, astrocytoma, choroid plexus papilloma, ependymoma, meningioma, pituitary adenoma chordoma and neurofibromatosis can also cause bleeding, bleeding of medulloblastoma in children [7]. Types of tumor hemorrhage category and the location of tumor and different, can have the brain parenchyma, ventricles of the brain, subarachnoid hemorrhage, subdural and epidural. Wakai et al. [8] 45 cases of tumor hemorrhage analysis,

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83% tumors or intracerebral hemorrhage, 15% subarachnoid hemorrhage, 2% subdural hemorrhage. 1 tumor hemorrhage intracerebral hemorrhage is the most common type of tumor hemorrhage, mostly for the hemorrhage within the tumor, only 15% of the hemorrhage in tumors around the hemorrhage of the primary tumor, with glioblastoma, the most common malignant astrocytoma, oligodendroglioma and pituitary adenoma in transfer; tumors, lung cancer, melanoma, gastric cancer is the most common tumor and cashmere approximately 2/3 of tumor hemorrhage acute onset. Subarachnoid hemorrhage is second only to another type of intracerebral hemorrhage after subarachnoid hemorrhage in 2, is located in the brain surface by tumor, glioma, meningioma, astrocytomas, pituitary adenomas and metastases cause, which, to incidence of primary tumors of the high metastatic cancer caused by subarachnoid hemorrhage. 3 intraventricular hemorrhage in tumors induced by intraventricular hemorrhage formation rate is low. By intracerebral hemorrhage rupturing into ventricle or cause are common tumors of the choroid plexus papilloma, ependymoma and metastatic carcinoma by growth in intraventricular Chi tumor hemorrhage. 4 subdural hemorrhage caused by tumor subdural hemorrhage rate is relatively low, with the most common metastatic carcinoma. The main source of bleeding may be tumor blood flow into the subdural or due to tumor invasion resulting in bridging veins subdural rupture is related to tumor and malignant lymphoma, melanoma, prostate cancer, lung cancer, liver cancer. Meningiomas can sometimes cause a subdural hematoma. 5 epidural hemorrhage is rare, can be caused by meningioma.

Types of tumor hemorrhage category and the location of tumor and different, can have the brain parenchyma, ventricles of the brain, subarachnoid hemorrhage, subdural and epidural. Wakai et al. [8] 45 cases of tumor hemorrhage analysis, 83% tumors or intracerebral hemorrhage, 15% subarachnoid hemorrhage, 2% subdural hemorrhage. 1 tumor hemorrhage mechanism is very complicated hemorrhage in different tumors may have different predisposing factors, can be divided into direct and indirect two categories. The so-called direct factor is bleeding caused by defects in the tumor itself: 1 tumor vessels have varices, wall thinning, vascular fistula, very prone to rupture of blood

vessel, with glioblastoma more see. Essence of the 2 tumors for vascular, containing a large number of sinusoids, easy bleeding injury. Such as leukemia and 3 abnormal blood quality. 4 as the tumor increases, increased blood supply artery for freshmen can not resist the blood pressure, and the occurrence of aneurysmal varix rupture failure, 5 tumor cells to the vascular wall. 6 venous thrombosis or tumor obstruction. The 7 radiation therapy, head trauma, surgical operation. The so-called indirect factors, refers to non tumor itself directly caused by bleeding. When the increased intracranial pressure exceeds the microcirculation perfusion pressure, is stagnant, anoxic endothelial cells damaged, the pipe wall rupture occurred around the vessels of focal hemorrhage, called microcirculation hemorrhage. When the intracranial pressure continues to rise to extremely serious extent, it caused the displacement of the brain stem and twisted, occurrence of massive bleeding, known as systemic hemorrhage. Laboratory examination: no special performance. Other auxiliary examination: in the acute phase of bleeding, CT showed high density, low density or density area around with space-occupying effect after reinforcement showed different degrees of irregular density. Chronic period, with the liquefied hematoma, absorption, high density lesion hemorrhage into density or low density but CT is located in the skull base or posterior fossa lesions less sensitive and sometimes can not be within the tumor with multiple small calcified plaque and hemorrhage is the distinction between magnetic resonance imaging diagnosis of effective means, it not only for the hemorrhage type, and prognosis of hematoma can accurately diagnose, can diagnose CT undiagnosed lesions, especially for the differential diagnosis of brain vascular malformation was significantly superior to that of CT. In addition, the blood image rich tumor should be further cerebral angiography.

### Clinical demonstrations

Usually the tumor intracranial hemorrhage clinical manifestation of bleeding and other reasons are not the same, for a known brain tumors from patients suddenly illness, appear when a new possibility of neural dysfunction, acute hemorrhagic tumor greatly. But for only to hemorrhage of brain tumor patients, the first symptoms at this time, the primary tumor was often ignored. Therefore, the abnormal position

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**Table 1.** Characteristics of the 7 patients

Patients	Gender	Age	Bleeding site	Generalized headaches	Memory impairment	Medical history
Patient 1	Male	76	Intracerebral hemorrhage	Yes	Yes	No
Patient 2	Female	59	Frontal hemorrhage	Yes	No	No
Patient 3	Male	61	Temporal hematoma	No	No	No
Patient 4	Male	52	Intracerebral hemorrhage	Yes	Yes	No
Patient 5	Female	56	Subdural and intracerebral hematoma	No	Yes	Yes
Patient 6	Female	45	Subdural hematoma	Yes	No	Yes
Patient 7	Male	72	Intracerebral hemorrhage	Yes	Yes	No

**Table 2.** Tumor types and vascularity in patients with brain hemorrhage

Patients	Tumor types	Vascularity
Patient 1	Melanoma	Moderately vascular
Patient 2	Hypernephroma	Highly vascular
Patient 3	Adrenal carcinoma	Focal clusters of vessels
Patient 4	Hemangiopericytoma	Highly vascular
Patient 5	Anaplastic	Highly vascular
Patient 6	Oligodendroglioma	Clusters of vessels
Patient 7	Glioblastoma multiforme	Highly vascular

of hemorrhage, and no other risk factors for bleeding health search or the reason of the case, be suspected of tumor hemorrhage, further CT scan and MRI. There are reports in intracranial tumor hemorrhage patients, about 24% cases with hemorrhage as the first symptom.

In our study, 7 patients with different bleeding site, including 3 with intracerebral hemorrhage site, 1 with frontal hemorrhage site, 1 with temporal hematoma site, 1 with subdural and intracerebral hematoma site and 1 with subdural hematoma site. The age ranges from 45 years to 76 years. Furthermore, the generalized headaches, memory impairment and the medical history were also illustrated in **Table 1**.

### Observation outcomes

The length of survival is listed in **Table 2**. None of the patients receiving medical therapy alone lived longer than 4 weeks. Two of the 3 patients decompressed surgically left the hospital. One subsequently died 2 months later from progressive growth of a glioblastoma multiforme. The other is alive 1 year following resection of a hypernephroma nodule and associated cerebellar hematoma, but multiple brain metastases

subsequently have been identified. The 2 patients with a diencephalic tumor died 2 and 3 weeks following hemorrhage without apparent benefit from ventricular drainage. The gross findings in the 11 patients undergoing postmortem examination correlated closely with the CT scan findings.

### Diagnosis and treatments

In the CT and magnetic resonance imaging applications in the past, tumor bleeding by surgical operation or biopsy diagnosis, with the wide application of CT and MRI diagnosis of intracranial tumor haemorrhage is not difficult. The vast majority of tumor hemorrhage after CT contrast enhancement can be diagnosed Chi. Differential diagnosis: for brain tumor patients with hemorrhage as the first symptom, should pay attention to and cerebral disease phase differential imaging such as found in tumor venous malformation, aneurysm, hypertension and moyamoya disease, cerebral hemorrhage, the diagnosis may be confirmed.

Excision of intracranial tumor haemorrhage include hemorrhage and tumor, small health search bleeding does not need special treatment, while the larger bleeding, especially because of bleeding, fierce and has obvious space occupying effect on intracranial pressure increased sharply under the condition of search for health, emergency surgery operation [9-11]. Operation in the clearance of hematoma at the same time, we should be excised tumor, or risk of re-bleeding. But for malignant tumor resection can be performed according to the specific circumstances, radiotherapy chemotherapy prognosis of postoperative intracranial tumor haemorrhage: most of the patients with poor

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prognosis because of intracranial bleeding caused by tumor is highly malignant primary tumors or metastatic carcinoma and bleeding on the brain damage, only a very small number of patients with early detection, timely treatment can obtain better prognosis [12, 13].

### Special clinical problems and guidelines

The most common site for hypertensive hemorrhages is the putamen. The hemorrhage may remain localized or it can track into the white matter, into the frontal or temporal lobe, involve the internal capsule or rupture into the ventricle [14, 15]. The larger the lesion, the greater the deficit and the worse the prognosis. The clinical syndrome is well-described. Patients are characteristically up and active when they become aware that something is wrong. Then a hemiparesis emerges smoothly and steadily. This may progress to a hemiplegia and in some cases it is accompanied by hemisensory loss, hemianopia, dysphasia if the dominant hemisphere is affected and unawareness of the deficit if the non-dominant hemisphere is involved.

There is frequently conjugate deviation of the eyes to the side of the hemorrhage [16-18]. The syndrome may cease at any point or continue to coma and death within a few hours. In 27 consecutive cases, a smooth onset characterized 62% while 30% developed symptoms so rapidly that observers felt that deficit was nearly maximal at onset. None of the patients experienced fluctuation of the deficit. Headache affected only 14% at onset and only 28% at any time, leaving nearly 72% free of headache even in the presence of substantial focal neurological deficit. On examination, none showed papilloedema or sub-hyaloid pre-retinal hemorrhages. Some form of motor deficit affected all cases, varying from mild to complete paralysis. Sensory disorder was not fully evaluated in some cases but approximately 65% of the patients tested showed some alteration in response to pin prick. 20 Most small and many moderate-sized hematomas in the putamen make a good recovery either spontaneously or with medical treatment. With hematomas larger than 3 cm in diameter, the initial treatment is usually medical but if the patient shows signs of increasing neurological deficit or decreasing state of consciousness in spite of vigorous medical therapy, surgical removal of the hematoma is considered.

In an evaluation of the CT scans in 24 patients with putaminal hemorrhage, three groups were defined. 21 In the first group, patients comatose on admission were found to have massive hemorrhages and a poor prognosis. The second group was alert with substantial neurological deficit and moderate-sized hematomas. A few made acceptable recoveries, but the majority were left with a significant deficit. The third group had only mild deficits, were found to have small hemorrhages on the CT scan and they generally made a good recovery. Whether surgery would have improved the outcome in the first two groups is not known.

In conclusion, the intracranial brain hemorrhage related with the several types of tumors, including hemangiopericytoma, metastatic carcinomas, oligodendroglioma, and glioblastoma multiforme, which may be helpful to these patients.

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### Disclosure of conflict of interest

None.

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