

## Anaplastic intraventricular oligodendrogliomas masquerading as hemorrhagic stroke

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**Abstract:** Spontaneous intraventricular hemorrhage caused by anaplastic oligodendrogliomas is extremely rare. Here, we reported an uncommon anaplastic IVO involved in the trigone of right lateral ventricle masquerading as hemorrhagic stroke. A 37-year old man suffered sudden onset severe headache, vomiting, he had developed progressively worsening in consciousness at a community hospital. Then this patient underwent subtotal resection with a good recovery, the initial presentation of intraventricular hemorrhagic stroke caused from uncommon anaplastic IVO, although relatively infrequent, the presence of an occult neoplasm causing a intraventricular hemorrhage needs to be emphasized.

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**Key words:** Anaplastic oligodendrogliomas, Intraventricular system, Hemorrhagic stroke

### 1. Introduction

Anaplastic intraventricular oligodendroglioma (IVO) is an extremely rare tumor, up to now, only isolated 4 cases reported in the previous literatures<sup>1,2,3,4</sup>. We reported an uncommon anaplastic IVO involved in the trigone of right lateral ventricle masquerading as hemorrhagic stroke, the patient underwent subtotal resection with a good recovery. Consequently, unusual intraventricular hemorrhage secondary to anaplastic IVO should be highlighted.

### 2. Case report

A 37-year old man suffered sudden onset severe headache, vomiting, he had developed progressively worsening in consciousness at a community hospital. He had no history of hypertension and anticoagulation. Neurological examination evaluation revealed that he was coma and left hemiparesis, meningeal irritation sign and babinski's sign on the left were positive. Acute computed tomography (CT) scan demonstrated a 3.5x5.2cm intraventricular hemotoma and obstructive hydrocephalus. He was initially treated with external ventricular drainage bilaterally, his consciousness was improved gradually, in the next 30 days he recovered partially with left weakness of the left arm and leg, two months after first operation, he transferred to our hospital for investigating the cause of hemorrhage, magnetic resonance artery (MRA) showed space-occupying lesion in the trigone of right lateral ventricle, no abnormal vessels or aneurysms or moyamoya disease was observed, magnetic resonance

imaging (MRI) demonstrated heterogeneous mixed signal intensity lesion on-T1 weighted images and inhomogeneously enhancing lesion in the trigone of right lateral ventricle. The second operation for tumor remove was performed in our hospital through transtemporal transcortical approach. Histological examination proved to be anaplastic oligodendroglial, immunohistochemistry staining for Glial fibrillary acidic protein (GFAP), Vimentin, oligodendrocytes antigen (Oligo-2) were positive, the percentage of Ki-67-positive cells was 40%, Creatine kinase, epithelial membrane antigen, synaptophysin and neuronal nuclei (NeuN) staining were negative. Temozolomide administration and adjuvant radiation therapy were adopted in present patient. Follow-up was continued for 2 months, and no symptoms recurred after surgery.

### 3. Discussion

Intraventricular haemorrhage is a severe stroke subtype with high rates of morbidity and mortality. The initial diagnosis of present patient is cerebrovascular disease, significant degree of misdiagnosis of such stroke is related to following factors: firstly, this patient lack of previous history of neoplasia. Although spontaneous intracranial hemorrhage caused by brain tumors is not uncommon<sup>5</sup>, however, this circumstance usually occurs in the intratumoral hemorrhage, it is exceedingly unusual of anaplastic IVO leading to intraventricular haemorrhage due to uncommon location. Secondly,

the commonest etiologies resulting in intraventricular hemorrhagic were hypertension and arterio-venous malformations as well as moyamoya disease based on previous literature <sup>6</sup>. Thirdly, More than 90% of oligodendroglioma arise in the supratentorial white matter, the most commonest location is in the frontal lobe, less than 10% occur in the posterior fossa and spinal cord, only very few cases of anaplastic oligodendroglioma involving of ventricular system have been reported <sup>7</sup>.

Oligodendroglial tumors are the least common of the gliomas which accounting for 3% to 20% of all glial tumors, only 30% of oligodendroglial belongs to anaplastic oligodendrogliomas. From the solitary

report of anaplastic IVO located in the ventricle system, the common clinical manifestations of IVO is elevated intracranial pressure, less frequent clinical presentations included hemiparesis, spasticity, cranial nerve palsies, and hemifacial spasm <sup>2</sup>. However, the initial presentation of acute intraventricular hemotoma and coma have not been described based on previous literatures, to our knowledge, this is the first report of an anaplastic oligodendroglial leading to intraventricular hemorrhagic stroke. In addition, patients with anaplastic IVO maybe seed metastases from ventricle to cauda equina, the prognosis for anaplastic IVO is usually poor due to highly malignant histology.

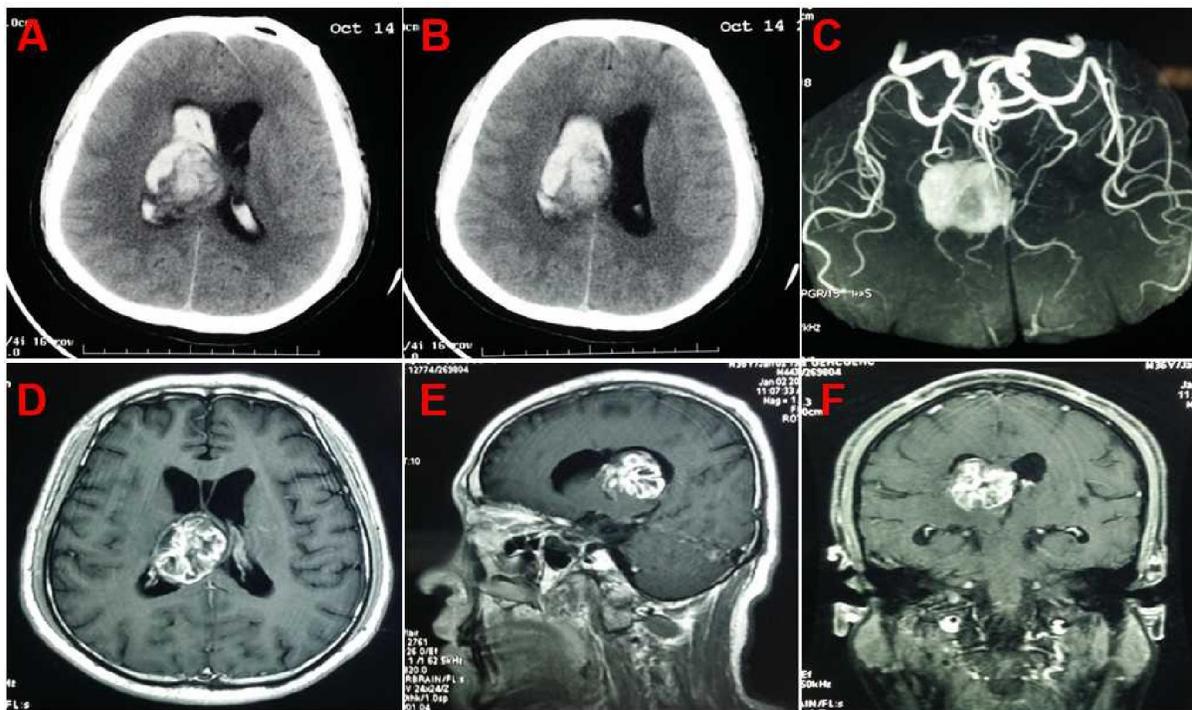


Fig 1. CT scan showing intraventricular hemorrhage and hydrocephalus simultaneously (A,B). MRA demonstrating show space-occupying lesion in the right trigone of lateral ventricles (C). Axial (D),sagittal (E) and coronal (F) gadolinium-enhanced T1-weighted MRI showing the inhomogeneously enhancing lesion in the right trigone of lateral ventricles.

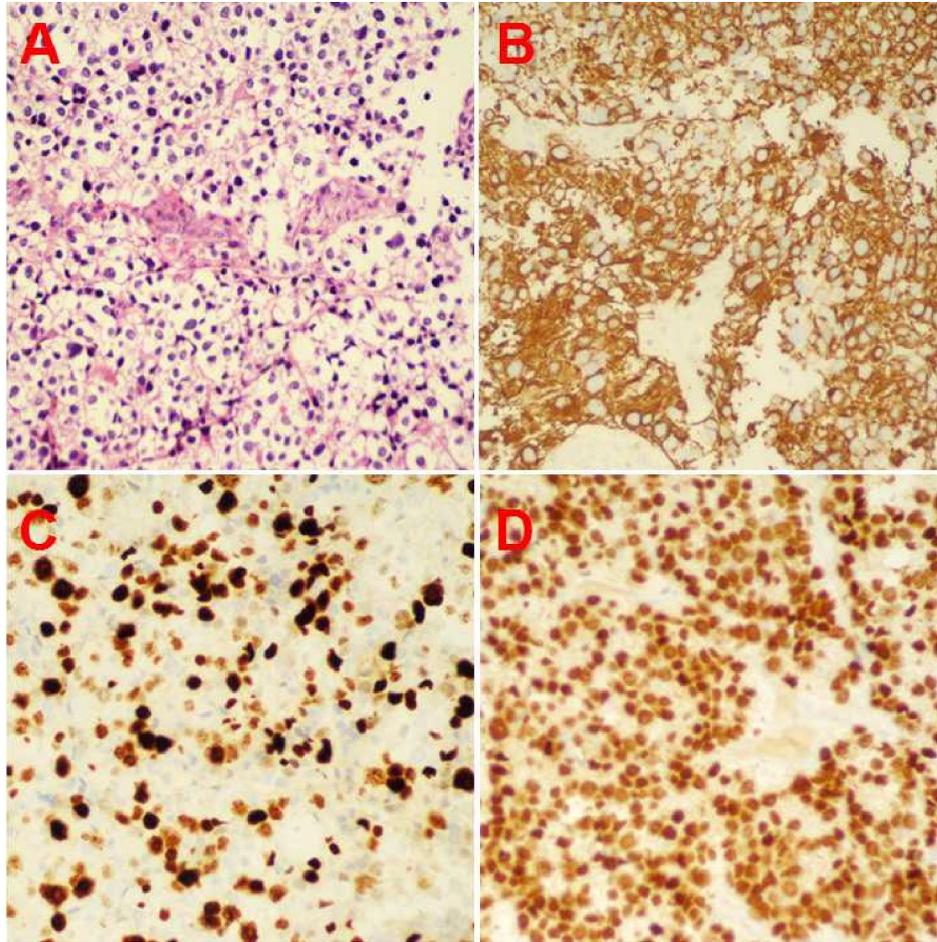


Fig 2. Histopathology (A) and immunohistochemistry (B,C,D) showing the tumor consists of round-to-oblong cells with marked nuclear pleomorphism and proliferation of endothelial cells. (haemotoxylin and eosin, original magnification x200) with immunostaining for (B) GFAP (original magnification x400), (C) Ki-67 and (D)Oligo-2 (original magnification x200).

Table 1: Rare intracranial anaplastic oligodendroglioma involved in the ventricular system

Author	Year	Age/Sex	Symptoms	Tumor Location	Treatment	Prognosis
Packer RJ	1985	18/Male	Diplopia, altered mental status	Fourth Ventricle		Surgery(Tumor resection)
			Recurrence at 21 month			
			Internuclear ophthalmoplegia			
Natale M	2005	67/Female	Paraparesis, increased ICP	Trigone of left lateral		Surgery+
			Death at 8 months			
			Low back and leg pain	ventricle, Cauda equina	after operation	
Zada G	2009	22/Female	Alter mental status, lethargy	Right lateral		ventricle
			Surgery+ventriculoperitoneal shunt			
			Death at 3 weeks			
			Increased ICP, cranial nerve			
			III palsy			
Pomero E	2012	24/Female	Seizures	Right lateral ventricle	Surgery(Three times)+	Temozolomide
			NA			
			Frontal lobe			
Present case	2016	37/Male	Coma,	Intraventricular	hemorrhage	Trigone of right lateral
			Good			Surgery+
			Temozolomide+irradiation			
			left hemiparesis	ventricle		

ICP: intracranial pressure, NA: not available

**Conclusions**

Isolated anaplastic IVO is extremely rare, majority of oligodendrogliomas belong to low-grade neoplasms, this is the fifth case of anaplastic IVO involved in the intraventricular system due to high-grade histology, another striking clinical feature is the initial presentation of intraventricular hemorrhagic stroke caused from uncommon anaplastic IVO, although relatively infrequent, the presence of an occult neoplasm causing a intraventricular hemorrhage needs to be emphasized.

**Conflicts of interest**

None

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**Conferences**

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