Pure Intraventricular Glioblastoma

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ÖZET
Tümüyle intraventriküler yerleşimli glioblastoma

Anahtar Kelimeler: Intraventricüler tümör, Glioblastoma, Cerrahi

SUMMARY
Glioblastoma (GBM) is the most common primary malignant brain tumor and it is usually located within the supratentorial brain parenchyma. Pure intraventricular location is extremely rare. We presented a 48-year-old male patient with pure intraventricular GBM. He was admitted to our hospital with headache and nausea-vomiting and the magnetic resonance imaging revealed a mass lesion purely located in the occipital horn of the lateral ventricle. The tumor was removed gross totally via left occipital craniotomy. The histological examination confirmed the diagnosis of GBM. GBM should be kept in mind in the differential diagnosis of intraventricular mass lesions. Accurate diagnosis and prompt surgical intervention are required to achieve good clinical outcome in patients with intraventricular GBM.

Key words: Intraventricular tumor, Glioblastoma, Surgery

Introduction
Intraventricular tumors frequently becomes symptomatic when they increase the intracranial pressure and they can be diagnosed by current radiological tools such as computed tomography (CT) and magnetic resonance imaging (MRI) (1).

The lateral ventricle tumors are rare lesions in neurosurgical practice and are mostly seen in the trigon and the least localization is the temporal horn (2). The incidence of ventricle tumors is 3% in adults and 16% in pediatric patients. 25% of pediatric ventricle tumors and 49% of adult ventricle tumors are seen in lateral ventricles (3).

Intraventricular tumors can be lined up as; choroid plexus papillomas, choroid plexus carcinomas, meningiomas, lymphomas, teratomas, subependymomas, ependymomas, oligodendrogliomas, pilocytic astrocytomas, anaplastic astrocytomas, subependymal giant cell astrocytomas, oligodendrogliomas, glioblastomas, schwannomas, arachnoid cysts, and metastatic tumors (1,2,4).

Glioblastoma (GBM) is a WHO grade IV malignant astrocytic tumor and mostly located in the supratentorial part of the brain (5). The origin of these tumors is subcortical white matter but they usually infiltrate the cortex and/or deep nuclei. They can also penetrate into the ventricles. There are only a few intraventricular GBM cases reported in the literature (2,3,4,6,7).

Here, we reported a case of pure intraventricular GBM located in the occipital horn of the lateral ventricle. We presented the radiological, surgical and pathological characteristics of this tumor with a rare location and discussed with the relevant literature.

Case Report
A 48-year-old male patient admitted to our hospital with the complaints of headache and nausea-vomiting, resistant to medical treatment. In his cranial MRI, a pure intraventricular contrast-enhancing mass lesion filled the left occipital horn was detected. The tumor did not invade the adjacent brain parenchyma (Fig. 1). The patient underwent surgical treatment...
via left occipital craniotomy and the tumor was gross totally re-
moved via transcortical approach. The histopathological ex-
amination revealed the diagnosis of GBM (Fig. 2). The patient
was discharged without a neurological deficit and he also re-
ceived whole brain radiotherapy for the tumor. The MRI of the
patient obtained 3 months after surgery confirmed the removal
of the tumor (Fig. 3).

Figure 2: Histological picture of GBM. (A) Extensive necrosis is seen in tumor
(x10, H&E), (B) Focal microvascular proliferation surrounded with neoplastic
cells (x45, H&E). (C) High grade nuclear features in non-necrotic areas. Bizarre
nuclei and occasional karyorhectic cells are evident (x45, H&E).

Figure 3: Postoperative (A) axial, (B) coronal and (C) sagittal sections of T1-
weighted MRI of the patient confirmed the removal of the tumor.

Discussion

Lateral ventricle tumors are not rare, but high grade gliomas
into the lateral ventricle are seldom reported in the literature
(3,6,7). Lateral ventricle tumors can be presented as benign
or malignant lesions. The clinical presentation of intraventric-
cular tumors are mostly related to cerebrospinal fluid (CSF)
disturbances. They may hinder the CSF circulation and cause
hydrocephalus-related symptoms. The patients may die when
prompt diagnosis of intraventricular tumor is not done and pro-
per surgical intervention such as CSF diversion procedures or
emergent tumor removal is not performed by the neurosurge-
ons. Ventriculoperitoneal shunt placement with/without tumor
removal is crucial for the treatment of hydrocephalus. But the
tumor removal itself may also provide satisfactory CSF circu-
lation into the ventricles without shunt insertion. Biopsy and
surgical planning, addition of adjuvant therapy modalities in-
cluding radiotherapy and chemotherapy are the other important
points in the treatment of intraventricular tumors. Stereotactic
techniques can also be used for diagnosis of deeply located
ventricular lesions (8). On the other hand, the histological type
of tumor is an important prognostic factor for intraventricular
tumors.

As we know, glial tumors are the most common primary in-
tracranial tumors and GBM is the most common type of glial
tumors (2,3,4). But it has a poor prognosis despite the advan-
cements in the surgical technique and technologies (9,10).
GBMs are hemispheric tumors and seldom located in the vent-
ricles. They may presented a single lesion or multicentric tu-
mors (10). But there are a few reports in the literature on the
intraventricular GBM and most of them were small case series
(6,7,10,11).

Secer et al. (6) reported 9 cases of lateral ventricle GBM. Body of the lateral ventricle is the most common location in these
tumors. In our case, the tumor located into the left occi-
pital horn of the lateral ventricle. There was no invasion around
the parenchymal structures of the lateral ventricle. The most
common origins of the GBM in the lateral ventricles were the
trigone, body, and temporal horn of the in the series of Secer et
al (6). They reported that total tumor excision was achieved in
only 1 patient. The major goal in such cases is decompressive
surgery, as in the present patient, and adjuvant radiotherapy
and chemotherapy are applied. Despite the availability of new
treatment options, prognosis is still poor (9).

Transcallosal and transcortical approaches are the main
techniques to reach the tumors located in the lateral ventricle
(6,7). Transcallosal route is mostly suitable for the tumors loca-
ted into the frontal horn, body and atrium of the lateral ventric-
le, but transcortical route is appropriate for the tumors located
into the temporal or occipital horn of the lateral ventricle. In
the present case, we preferred left occipital transcortical approach
and the tumor was gross totally removed by this technique.

Sarsilmaz et al. (7) reported a case of pediatric GBM which
was located in the body and occipital horn of the lateral ventr-
icle. They incompletely removed the tumor via craniotomy but
they lost the patient 2 years after surgery. Intraventricular GBM
is very rare in childhood, but it may more frequently seen in
adults. Our patient is an adult man and was presented with
headache and nausea vomiting.

GBM may not only located in the lateral ventricles. It may
detected in the other ventricles. Lee and Manzano (12) pre-
sented a case of third ventricle GBM. They removed the tumor
via transcallosal approach, but the patient died 7 months after
surgery. So, the life expectancy of the patients with intraventric-
ular GBM is not long.

Recently, Sarıkaf et al. (13) presented a case of pure intr-
traventricular GBM in the occipital horn of the lateral ventricle
and they emphasized that pure intraventricular location is ex-
remely rare for these tumors.

As a conclusion; pure intraventricular GBM is very rare. This
tumor should be kept in mind in the differential diagnosis of the
lesions purely located in the lateral ventricle. Accurate diag-
nosis and prompt surgical intervention are necessary in these
cases in order to save the life of the patients.

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