Intraventricular tumors - silent or noisy cerebral pathology?

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Abstract: Intraventricular tumors are a rare cerebral pathology, often with a silent clinical evolution, diagnosed incidentally during cerebral imaging techniques (CT, MRI) while looking for other diseases, or diagnosed per se if they have a noisy evolution due to local complications. It is difficult to establish their etiology using indirect signs – localization, density, intensity, vascularization, other characteristics, and patient’s age. The purpose of this article is to present a case of silent intraventricular tumor, discovered incidentally during a CT for a suspicion of acute ischemic stroke, and to summarize the medical legal consequences of this pathology.

Key Words: intraventricular, tumor, etiology, ependymoma, silent, MRI.

Intraventricular tumors are heterogeneous, with distinct etiologies, radiological features or clinical manifestations. Determination of their precise etiology (excluding histopathology) can be difficult. Demographic features (age, gender), clinical and imaging findings as well as the intraventricular location and the tissue composing the ventricular lining, helps to limit the differential diagnosis when analyzing an intraventricular mass on imaging studies. The purpose of this article is to present a case of silent intraventricular tumor, discovered incidentally during a CT for a suspicion of acute ischemic stroke, and to summarize the medical legal consequences of this pathology.

CASE PRESENTATION

A 88 years-old man was admitted for muscle weakness in the right limbs and mixed aphasia, symptoms that started in the same morning and worsened progressively. The patient was known with significant chronic cardiac pathologies, chronic kidney disease, moderate normochrom normocytic anemia and Alzheimer’s.

The neurological examination revealed no signs of meningeal irritation, right homonymous hemianopsia, present bilaterally photomotor reflex, right central facial paresis, right hemiparesis (upper limb 0/5, lower limb 2/5), right limbs hypotonia, absent osteotendinous reflexes in the right lower limb, Babinski sign on the right side, mixed aphasia.

Native cerebral CT scan was performed as a screening method for detecting acute cerebral lesions and revealed enlarged subarachnoid space, enlarged basal cisternae and sylvian fissures and, at the midline level in the projection area of the third ventricle, a hyper-dense, well-circumscribed tumor lesion having with a diameter of about 1.8 cm. Cerebral CT scan also showed a left temporo-parietal cortical-subcortical hypodense lesion suggesting an acute ischemic stroke in the territory of the right middle cerebral artery.

Subsequent MRI was performed to further evaluate the abnormal findings and confirmed the tumor
situated in the same location and with the dimensions as
described during the CT scan, the acute ischemic stroke
in the territory of the right middle cerebral artery and
cerebral atrophy.

The MRI suggested the diagnosis of a silent
intraventricular tumor, possibly an ependymoma with
calcifications and possible older hemorrhages inside. The
patient was treated conservative, for the ischemic stroke
and his concomitant diseases. Neurosurgical treatment
was not indicated at the time of admittance in our clinic.

**DISCUSSION**

The discovery and evaluation of an
intraventricular tumor poses is challenging, as a correct
diagnosis and management is often difficult [1-10].
They are rare and have many overlapping imaging
features. Although imaging studies may suggest the
type of a particular tumor, the imaging patterns often
overlaps between various tumor types and none is truly
pathognomonic.

Intraventricular tumors are usually derived from
the ependyma or choroid plexus cells, only rarely being
neuronal, or metastatic [11-13]. The most often identified
intraventricular neoplasms are central neurocytomas,
unique to the ventricular system, located usually in the
anterior portion of the lateral ventricle near the foramen
of Monro, ependymomas and subependymomas, that
are usually found in the fourth or lateral ventricles,
choroid plexus carcinomas and papillomas, both
highly vascularized and with a high potential to cause
hydrocephalus, colloid cysts [14], meningiomas, and so
on [3, 6, 9, 15, 16].

Ventricular tumors can cause neuropsychological
deficits caused by either the tumor per , se or the surgical
procedure needed for its removal, that may affect the
decisional capacity and subsequently the capacity of the
patient to sign legal acts [17-28]. For example King found
that children with tumors in the area of the third ventricle
are likely to have impaired verbal recall tasks[29], Donnet
et al. found patient with tumors affecting the floor and
walls of the third ventricle to have memory impairment
[30], etc.

Ventricular tumors are a rare cause of sudden
death – they usually have significant symptoms, allowing e
definite diagnosis and often the surgical removal. They can
however cause sudden death by acute hydrocephalus [31,
32]. The most frequent intraventricular tumors associated
with sudden death are the colloid cysts. In a review of the
literature Ryder et al. found, from 59 sudden deaths due to
intraventricular tumors, 55 to be caused by colloid cysts
[14]. Cairns and Mosberg considered that about one out
of five colloid cysts can cause sudden death [33]. Other
intraventricular tumors have been rarely associated with
sudden death. For example Balko and Schultz described
a sudden death caused by an asymptomatic, large central
neurocytoma, that was expanded rapidly by an acute
hemorrhage, causing acute hydrocephalus by ventricular
compression and obstruction of the circulation of the
cerebro-spinal fluid (CSF)[34].

In conclusion, intraventricular tumors, even if
rare, can cause various neuropsychological complications
or even sudden death; therefore both the clinician and
the forensic pathologist must be aware of its potential
consequences, and interpret accordingly this casuistry.
Figure 2. A. Cerebral MRI coronal section showing a FLAIR sequence representing a hypointense lesion localized in the third ventricle with hyperintense periphery. B.C.D. Cerebral MRI - Sagittal sections showing hyperintense T1W1 intraventricular lesion.

References