World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

Check for updates

Intraventricular pilocytic astrocytoma: A case report

MOUHSSANI Mohamed [1,*], ELMI MOUSSA Saad [1], EL MANOUNI Othmane [2], El Mehdi HAKKOU [2] and EL OUAHABI Abdessamad [2]

[1] *Department of Neurosurgery of Mohamed V Military Training Hospital of Rabat, Rabat, Morocco.*
[2] *Departments of Neurosurgery, Hôpital des Spécialités, Mohamed V University of Rabat, Rabat, Morocco.*

World Journal of Advanced Research and Reviews, 2024, 22(01), 298–301

Publication history: Received on 29 January 2024; revised on 21 March 2024; accepted on 23 March 2024

Article DOI: https://doi.org/10.30574/wjarr.2024.22.1.0786

Abstract

Background: Pilocytic astrocytoma (PA) is a low-grade glioma that is common in children. Intraventricular location is extremely rare.

Case Description: We report a case of a young man, 19-year-old, that was admitted to our department for symptoms of increased intracranial pressure. Magnetic resonance imaging (MRI) of the brain revealed a large intraventricular mass within the left lateral ventricle which appears dilated and enlarged. The patient underwent right-sided frontal craniotomy for resection of the tumor. The resected mass was histologically diagnosed as pilocytic astrocytoma. Postoperatively, the patient had an uneventful evolution and was discharged without any neurological symptoms.

Conclusion: Although rare, PA should be considered as a differential diagnosis of large intraventricular tumors.

Keywords: Pilocytic Astrocytoma; Intraventricular Tumor; Ventricle; Intraventricular lesion; Hydrocephalus.

1. Introduction

Pilocytic astrocytomas (PA) are World Health Organization (WHO) Grade I astrocytic neoplasms that is common in the pediatric population with a peak incidence between 8 and 13 years of age [1,5,7,9,10]. These tumors are most frequently encountered in infratentorial structures, like cerebellum or optic pathway. Others locations of origin include midline structures of Cerebral Nervous System (CNS), such as thalamic/hypothalamic region [2,6,9]. Pilocytic astrocytoma that arise in the cerebral ventricle is rare.

In this report, we present a rare case of a 19-year-old man patient with a large intraventricular tumor which was later identified to be a Pilocytic astrocytoma.

2. Case report

2.1. History and clinical presentation

A 19-year-old male presented to the emergency department with one month of severe progressively worsening intermittent headache associated with vomiting and visual disturbances for 2 weeks. His past medical history was unremarkable. He denied any history of seizure, loss of consciousness. At the admission, he was alert and orientated, without cognitive disorders. There was no motor-sensory deficit. Ophthalmological examination showed a mild papilledema with blurring of vision.

* Corresponding author: Mohamed MOUHSSANI; Email: simomouha00@gmail.com

2.2. Diagnosis assessment

Magnetic resonance imaging (MRI) of the brain with and without contrast revealed a large intraventricular lesion measuring 7.6×7×6.3 cm, within the left lateral ventricle which appears dilated and enlarged. It was hypointense on T1-weighted, slightly hyperintense on T2-weighted sequences with mild heterogeneous enhancement after gadolinium injection (Figure 1,2).

2.3. Surgical Management

The patient underwent surgery with gross total resection of the lesion through the transfrontal approach. A large solid tumor was found and was removed with moderate bleeding. After tumor removal, a right frontal external ventricular drain (EVD) was placed.

2.4. Follow-up and outcome

His postoperative course was uneventful. He was discharged with close follow-up.

The histological examination of the excised tumor revealed multiple fragments of a neoplastic lesion of glial nature comprising cells of low-density showing Rosenthal fibers. Immunohistochemically, the tumor cells were largely positive for glial fibrillary acidic protein (GFAP). These characteristics were consistent with Pilocytic Astrocytoma, WHO grade I.

After 6 months of follow-up, neurological symptoms improved with good neurological status

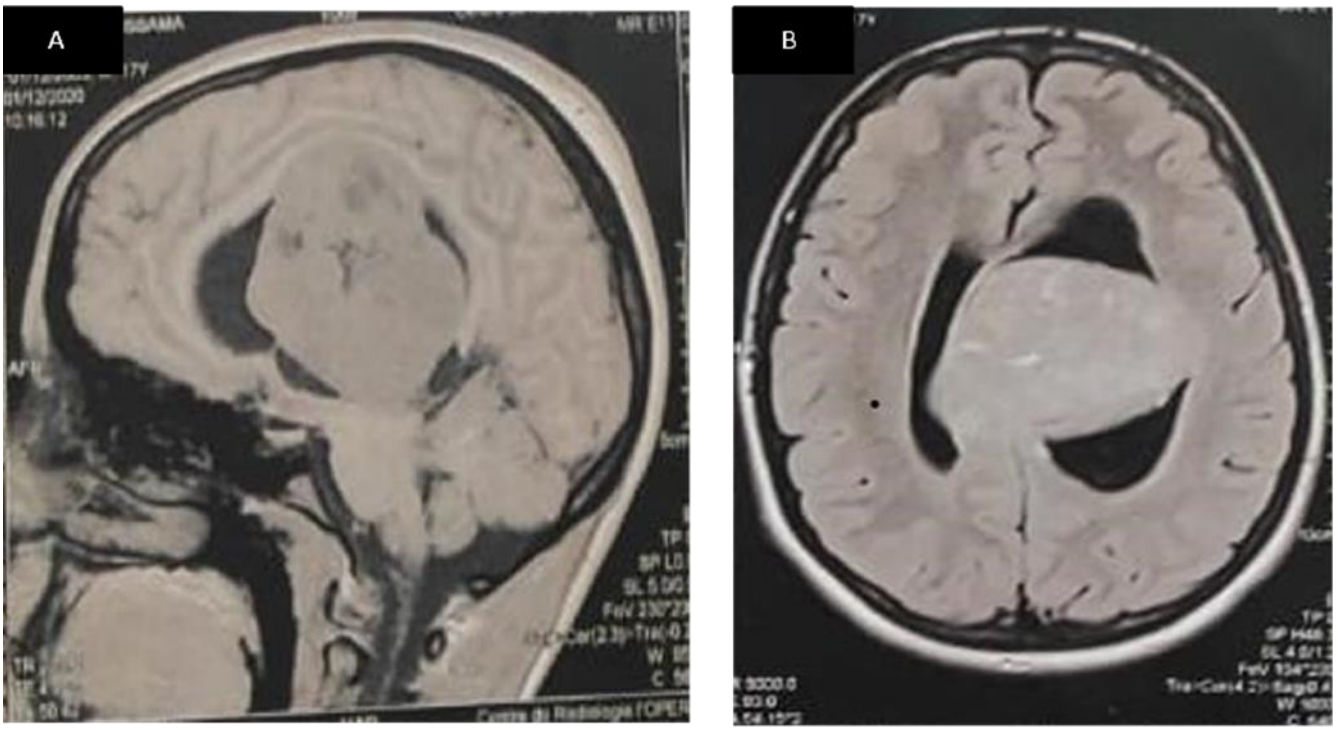

Figure 1 Magnetic resonance imaging (MRI) of the brain: Sagittal T1W (A), Axial T1W (B) revealed a large intraventricular lesion within the left lateral ventricle

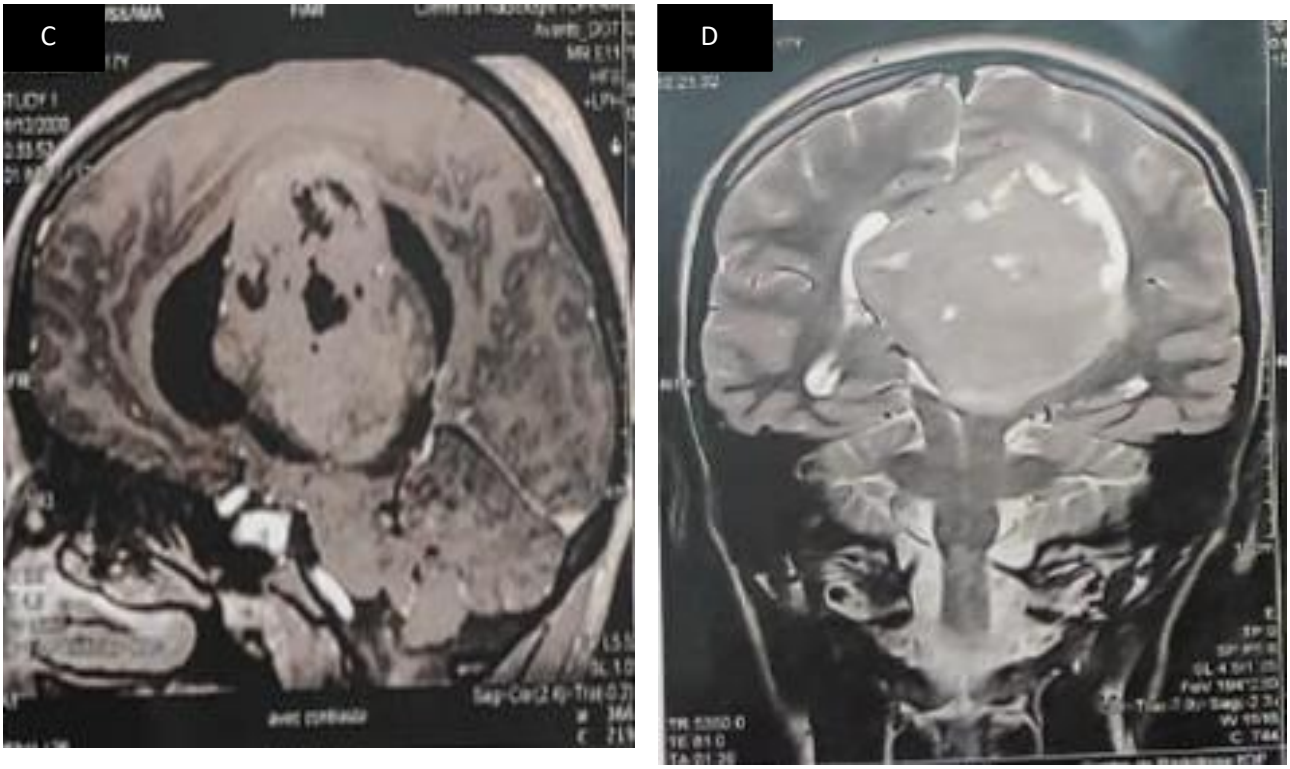

Figure 2 Magnetic Resonance Imaging (MRI) of the brain: Sagittal T1 post-contrast (C) and Coronal T2W (D) images showed a slightly hyperintense on T2-weighted sequences with mild heterogeneous enhancement after gadolinium injection.

3. Discussion

This is an unusual intraventricular location of PA. Neuroimaging demonstrated a large lesion within a left lateral cerebral ventricle which histologically showed to be classic PA.

This case furthers support that PA can arise in the cerebral ventricular system and should be in the differential diagnosis of intraventricular tumors.

Intraventricular neoplasms originate from cells forming the ependymal lining or the subependymal plate of the ventricular wall, choroid plexus, and glial lined structures such as septum pellucidum [5].

PA in the ventricle is relatively rare, accounting for approximately 4–15.6% of all PAs. [10]. PAs are usually seen in children and adolescents younger than 20 years, and the incidence decreases with age [4,8,10].

Intraventricular tumors are relatively asymptomatic. The symptoms appear after the tumor size enlarge enough and block the CSF pathways, leading to hydrocephalus and increased intracranial pressure. [9,11]. These clinical symptoms, includes headache, vomiting, mental disorders, ataxia, among others [10].

Xia *et al*. analyzed in a series of 12 patients with Intraventricular Pilocytic Astrocytoma and concluded that radiological manifestations of intraventricular PA are similar to those of other PAs of the brain [10]. The MRI characteristics of these tumors are low signal in T1WI, high signal T2WI with heterogeneous enhancement on post-gadolinium images.

The best treatment option for these tumors is surgery. The choice of approach depends on various factors, including: localization of the tumor within the ventricle, the hemispheric dominance, the size of the tumors, their vascular supply and drainage, and the presence or absence of hydrocephalus [3].

4. Conclusion

Although rare, PA should be considered as a differential diagnosis of large intraventricular tumors.

Compliance with ethical standards

Disclosure of conflict of interest

There are no conflicts of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study

References

[1] Ahn JS, Harrison W, Hughes E, McLendon RE. Intraventricular pilocytic astrocytoma with KIAA1549/BRAF fusion arising in a 44-year old. Journal of Neuropathology & Experimental Neurology.2019;78(2):187-190.

[2] Al Saleem MA, Alsafwani NS, ElSharkawy TM, Al-Suhibani SS, Essawi W. A 37-Year-Old Saudi Man with a Calcified Intraventricular Astrocytoma. The American Journal of Case Reports.2020;21: e928224-1.

[3] Anderson RC, Ghatan S & Feldstein NA (2003). Surgical approaches to tumors of the lateral ventricle. Neurosurgery Clinics.2003;14(4):509-525.

[4] Dash C, Moorthy S, Garg K, Sawarkar D, Singh PK, Kaur K, Suri V,Kumar A, Gurjar H, Borkar S, Chandra PS, Kale SS. Intraventricular Pilocytic Astrocytoma: A Single Centre Experience. Neurology India. 2022 ;70(4):1468.

[5] Filippidis AS & Tsonidis CA. Intra ventricular brain tumors in children. Pediatr Neurosurg.1989;20:230-3.

[6] Hendrix J,Xiong Z. Intraventricular pilocytic astrocytoma in an adult patient. Intractable & Rare Diseases Research.2020;9(4):260-262.

[7] Housley SB, Lim J, Starling RV, Siddiqui AH. Minimally Invasive Resection of Intraventricular Pilocytic Astrocytoma Using the Aurora Surgiscope in an Adult Patient. World Neurosurgery.2022;168:227-231.

[8] Sanford RA, Laurent JP. Intraventricular tumors of childhood. Cancer. 1985;56 (S7):1795-1799.

[9] Sattar S, Akhunzada NZ, Javed G, Uddin Z, Khan YA. Pilocytic astrocytoma: A rare presentation as intraventricular tumor. Surg Neurol Int.2017;8:116.

[10] Xia JG, Yin B, Liu L, Lu YP, Geng DY, Tian WZ. Imaging features of pilocytic astrocytoma in cerebral ventricles. Clin Neuroradiol.2016; 26:341-346.

[11] Zuccaro G, Sosa F, Cuccia V, Lubieniecky F, Monges J. Lateral ventricle tumors in children : A series of 54 cases. Childs Nerv Syst.1999;15:774-85.