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**Case Report** **Traumatology**

# Atypical Presentation of a Pilocytic Astrocytoma at the Regional Hospital of Ségou in Mali country

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## Abstract

***Introduction*:** Pilocytic astrocytoma is the most common cerebral glioma in pediatric age, preferentially located in the posterior cerebral fossa. Atypical presentations have rarely been described in the literature. ***Clinical Case*:** We report a case of pilocytic astrocytoma whose appearance on CT scan is unusual. It concerns a young boy of 9 years old, who presented convulsive seizures since the age of 6 years old, followed by general practitioners with irregular treatment based on gardenal. 2 months ago the seizures became more frequent and this prompted a specialist consultation with the neurologist, after a brain scan he referred the patient to us. The neurological examination was unremarkable today. Brain CT with contrast showed a right parietal lesion. It was a lesion with a double cystic and fleshy component associated with calcifications with heterogeneous enhancement which amputated the posterior horn of the lateral ventricle. The radiological appearance was in favor of a low-grade oligodendroglioma. The patient underwent surgery with complete macroscopic excision of the lesion. Histological examination revealed a pilocytic astrocytoma (grade I). ***Conclusion*:** The usual radiological appearance of pilocytic astrocytoma combines a cystic part and a highly contrasting mural nodule. It rarely presents in the form of a supratentorial lesion with calcifications. This form of presentation is rare and can lead to confusion with other gliomas. We can achieve healing for the patient with total excision.

**Keywords:** Pilocytic astrocytoma, supratentorial, calcifications.



## INTRODUCTION

Astrocytoma is a tumor developed from astrocytic cells and is part of gliomas, tumors developed from glial cells, which constitute the supporting tissue of neurons [1].

Pilocytic astrocytomas are WHO grade I benign tumors that are generally circumscribed and slow-growing and more common in children [1, 2].

The most common locations are the optic nerve pathways, the brainstem and the cerebellum. They are slow growing and are the most common subtype of a low-grade glioma.

In children, they are very common in the cerebellum and can lead to increased intracranial pressure. Pathologically, they have relatively well-defined borders and Rosenthal fibers are seen microscopically.

They represent approximately 5-6% of all gliomas. This type of tumor has an overall incidence of 0.37 per 100,000 people per year. Pilocytic astrocytomas are usually seen in children and young adults. They can occur at any age in children and adolescents, but the

median age for a juvenile pilocytic astrocytoma is 5 to 14 years old. This type of tumor is unusual in infants and very rare in adults [1-3].

Pilocytic astrocytoma represents 10% of brain astrocytic tumors and 85% of cerebellar tumors without sex predilection. Generally it presents in the form of a cystic tumor and total surgical excision can lead to the patient's recovery [4, 5].

The usual radiological appearance of this tumor combines a cystic part and a highly contrasting mural nodule, but confirmation remains histological [6]. Atypical presentations have rarely been described in the literature.

**Objective:**

We present the unusual case of a juvenile pilocytic astrocytoma in supratentorial location with large calcifications.

## CLINICAL CASE

We report a case of pilocytic astrocytoma whose appearance on CT scan is unusual. This is a young boy aged 9, who presented with generalized tonic-clonic convulsive seizures since the age of 6, followed by general practitioners at his reference health center with irregular antiepileptic treatment at gardenal base. For 2 months, an increase in the frequency of seizures motivated the family to take him for a specialized consultation with the neurologist, after an injected brain scan, he prescribed tegretol 200 mg and referred the patient to us. The neurological examination was unremarkable today. Brain imaging showed a right parietal lesion (Figure 1). It was a lesion with a double cystic and fleshy component associated with calcifications. After injection of the contrast product, there was heterogeneous enhancement, the lesion compressed the posterior horn of the ipsilateral lateral ventricle. The radiological appearance was in favor of a low-grade oligodendroglioma or teratoma. The patient was prepared as an outpatient for elective surgery he was hospitalized the day before surgery, we performed a large parietal craniotomy centered on the durotomy tumor with the base towards the midline and exposure of the tumor (Figure 2). Using bipolar electrocoagulation and aspiration we carried out a total macroscopic excision of the lesion without intraventricular extension following a good cleavage plane. The fleshy part was yellowish friable with the presence of calcification (Figure 3). Discharge was achieved 5 days after the operation without any neurological deficit (Figure 4). Histological examination revealed a pilocytic astrocytoma (grade I). The control brain scan with contrast at 45 days did not show any tumor tissue, a simple dilatation of the posterior horn of the ipsilateral lateral ventricle (Figure 5). Tegretol was reduced to half a tablet twice a day and the patient did not present any seizures 45 days postoperatively.

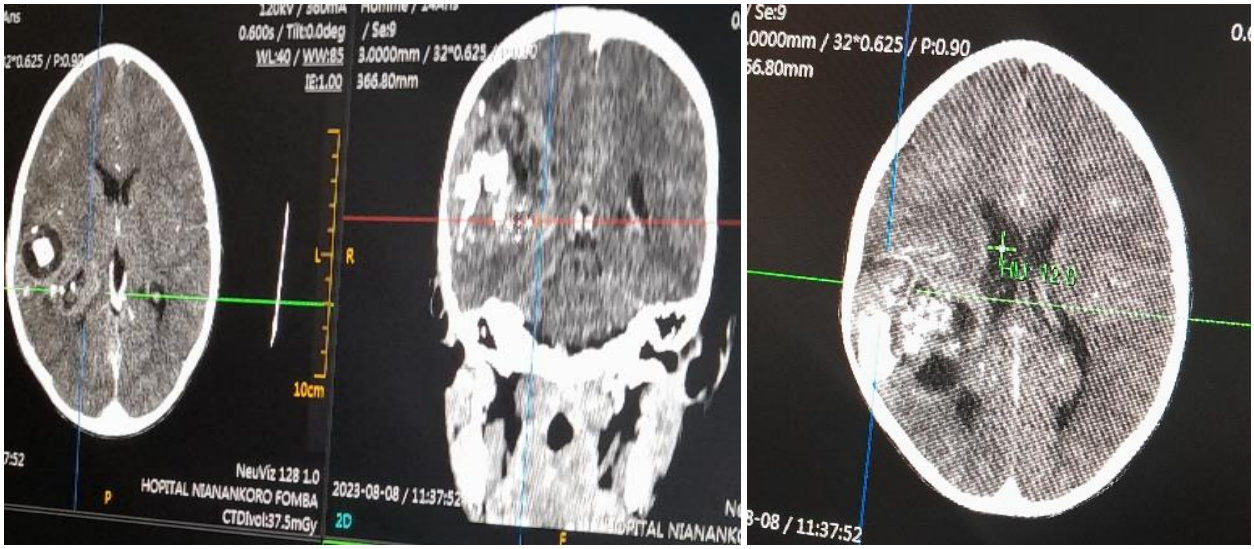


**Figure 1: Brain scan with contrast**

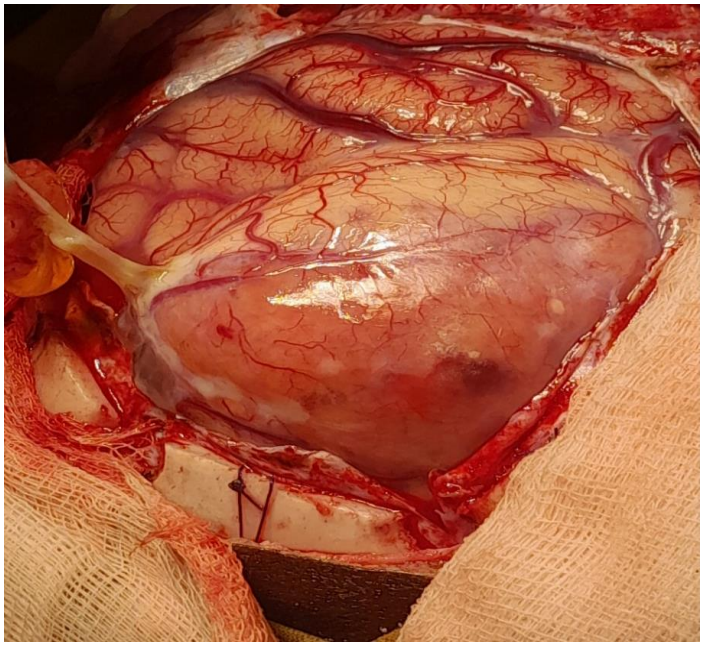

**Figure 2**

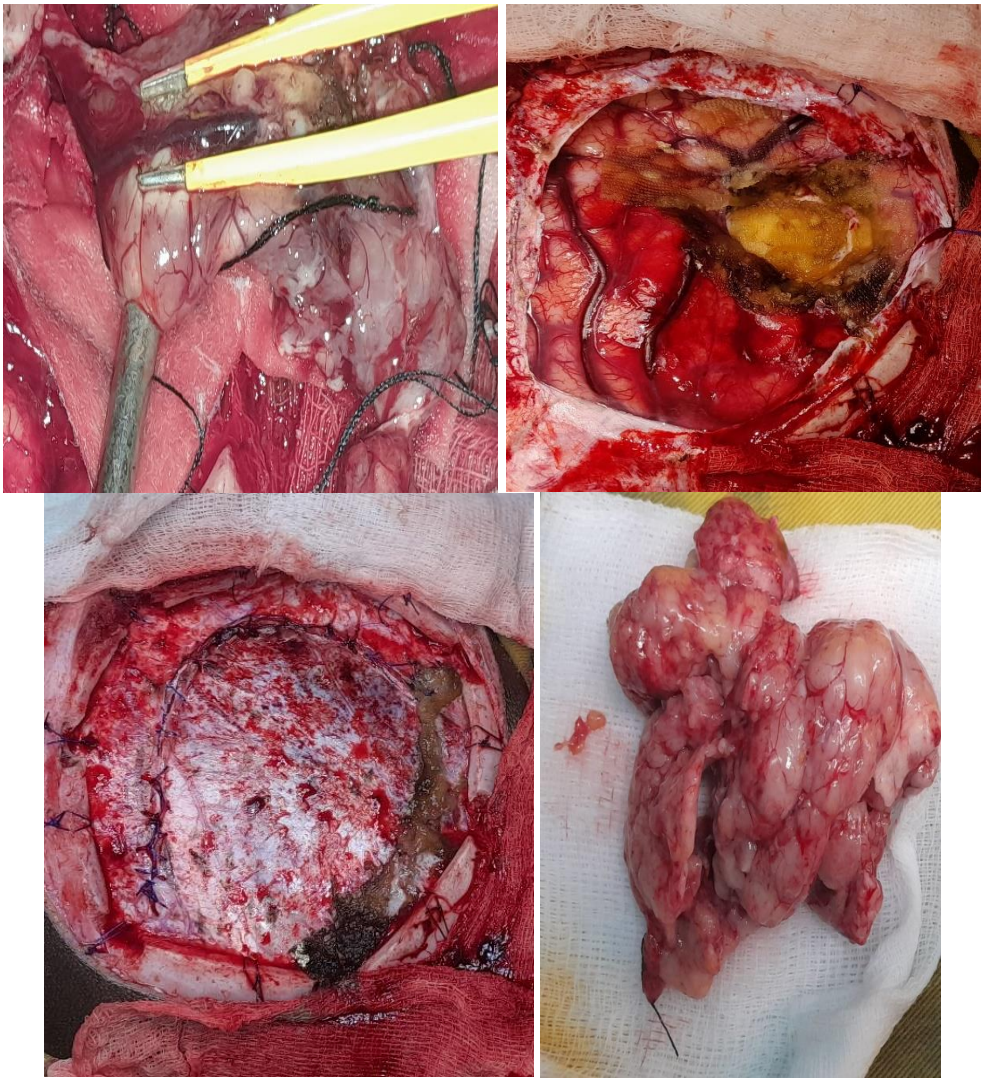

**Figure 3**

**Figure 4**

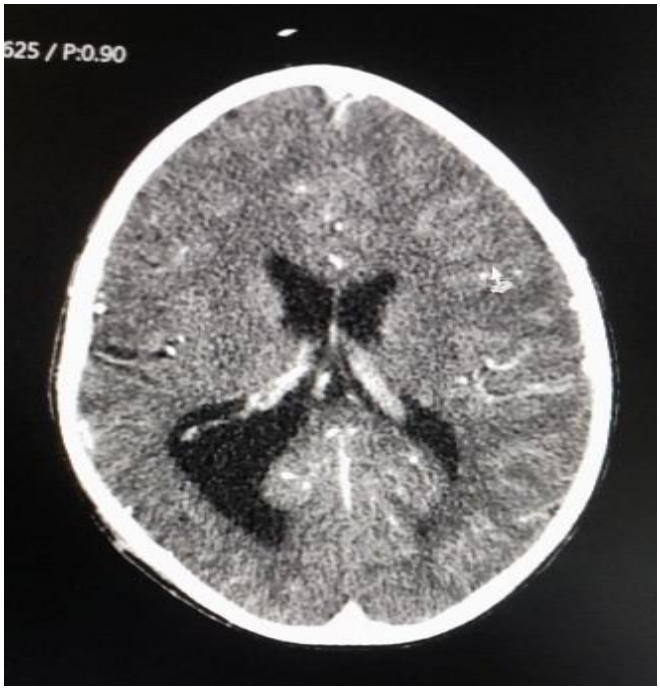


**Figure 5**

## DISCUSSION

We present the case of a right parietal pilocytic astrocytoma with epilepsy in a 9-year-old child. It was a lesion with heterogeneous contrast uptake with large calcifications; the radiological appearance was not typical of this tumor.

Pilocytic astrocytoma is more common in children, several serial studies have demonstrated this [7-9]. Which corresponds to the age of our patient.

Some studies report a greater incidence in men with a sex ratio of 1.26 Ohgaki *et al.*, [10]. This coincides with our case, it was a 9-year-old boy, however other series show a slight predominance in women with a sex

ratio of 1.22 [11]. In general it is accepted that pilocytic astrocytoma does not have a sex predilection [7]. J. Docampo *et al*., in their study on the presentation forms of pilocytic astrocytomas showed that the frequency remains almost the same in both sexes [12].

In a study which was carried out on 32 cases of pilocytic astrocytoma, 24 had a localization in the optic pathway, the hypothalamic-chiasmatic region and the cerebellum [12, 13]. The supratentorial location is unusual, our patient had a tumor at the right parietal level, an unusual location of pilocytic astrocytomas which can lead to confusion with other types of supratentorial tumors. Docampo *et al*., [12], in their series of 32 cases there were 2 cases of pilocytic astrocytoma in the temporoparietal region in 2 subjects aged 20 and 60 years. This glial tumor is common in children but can also be observed in adults in rare cases [12-14].

The posterior cerebral fossa is the most common location (61.7%). Presenting symptoms are usually insidious due to slow tumor growth [12-16]. The clinical presentation in hemispheric localization includes: headache, epilepsy, hemiparesis, nausea and vomiting [17]. Our patient presented with epilepsy and occasional headache without major signs of intracranial hypertension. Intraparenchymal hemorrhages have also been described as a presentation, although this is rare [18, 19].

The usual radiological appearance of pilocytic astrocytoma generally combines a cystic part and a highly contrasting mural nodule [18]. It rarely presents in a supratentorial location with calcifications. Our patient did not present this typical radiological appearance on the scanner but rather a mixed image with cystic and fleshy components with heterogeneous contrast uptake associated with large calcifications. Fatih Aydemir *et al*., [20], reported in their study that approximately 14% of pilocytic astrocytomas could present calcifications. This coincides with our clinical case which presented large calcifications.

The main differential diagnosis to consider is hemangioblastoma, as it usually occurs as a cystic lesion with an enhancing mural nodule. In these atypical forms of presentation, pilocytic astrocytomas can be confused with other brain tumors such as gangliogliomas, oligodendrogliomas, etc [20]. In our patient, the presumptive diagnosis of low-grade oligodendroglioma was made before surgery; the case was atypical due to its location and radiological appearance.

Treatment of the patient with pilocytic astrocytoma is complete resection. The patient is considered cured when the resection is complete. When radical surgery is not possible, particularly when located in deep locations or critical areas of the brain, radio surgery plays an important role in cases of small residual tumors [12, 20]. In our case, a generous location in the right parietal region allowed us to perform a complete macroscopic excision; the control CT scan with contrast 45 days after surgery did not show any residual tumor. The convulsive seizures completely disappeared after surgery but the anti-convulsive treatment has not been interrupted for the moment.

## CONCLUSION

Pilocytic astrocytomas are low-grade gliomas (grade I of the World Health Organization classification) which are most often located in the posterior cerebral fossa, optic pathway and hypothalamic-chiasmatic regions. These are solid-cystic and circumscribed tumors, if a complete resection is performed the patients have a high cure rate.

In general, a pilocytic astrocytoma is not suspected when the lesion is supratentorial with these atypical radiological appearances mentioned; we will have to think about this diagnosis.

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