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Convulsive Seizures Revealing a Meningioma in Children: A Case Report from the Hospital Center of Soavinandriana

Rasoarisoa Eliarivola[1], Razafindrafara Herilalao Elisabeth[2], Rabarison Manoahasina Ranaliarinosy[3], Rakotozanany Patrick Sandra[4], Ratovondrainy Willy[4], Randrianjafisamindrakotroka Nantenaina Soa[3]

[1]Department of Pathology, Anosiala University Hospital, Antananarivo, Madagascar
[2]Department of Pathology, Hospital Center of Soavinandriana, Antananarivo, Madagascar
[3]Department of Pathology, Joseph Ravoahangy Andrianavalona University Hospital Center, Antananarivo, Madagascar
[4]Department of Neurosurgery, Hospital Center of Soavinandriana, Antananarivo, Madagascar
Email: rherilalaoelisabeth@yahoo.fr

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Abstract

Meningiomas in children are rare. They represent only 1% to 3% of all intracranial tumors. It was a case report of a childhood girl meningioma, which is from the rare tumor and presenting by seizures, evolving in an apyretic context. She had no notion of irradiation or particular personal history apart from wearing glasses since the age of 5 years. She weighed 70 kg (BMI = 31). Biological examinations were normal. The brain scan showed a left frontal extra-axial tumor process measuring 76 × 60 × 55 mm. Tumor resection was performed. Macroscopically, the surgical specimen was found to be 8 firm, lobulated, yellowish-white fragments measuring 14 × 11 × 2 cm and weighing 150 g in total. The histological examination showed a proliferation of meningothelial cells, with a tendency to stratify and to roll up on each other in an onion bulb shape, without excess of mitoses and without cortical infiltration, evoking a meningioma. Meningioma in children remains a rare tumor. In our case, seizures were the only revealing signs of this disease. Cerebral computed tomography oriented the diagnosis. Anatomopathological examination was essential for confirmation.

Keywords

Child, Frontal Mass, Meningioma, Obesity

1. Introduction

Meningiomas occur most commonly in the fifth decade of life, accounting for

approximately 15% - 20% of primary intracranial tumors [1]. They are rare in a child and represent only 1% to 3% of all intracranial tumors [2]. They account for 0.9% - 3.1% of all intracranial meningiomas [3] [4]. Their epidemiological, radiological and anatomopathological characteristics are different from those of adults. Meningiomas tend to occur in males [5]. In children, meningotheliomatous meningioma is the most frequent variant [6]. We report a case in a 12-year-old girl, revealed by generalized seizures. The evolution was favorable. This is the first case of pediatric meningioma which would be published in Malagasy literature. Our aim was to determine the characteristics features of pediatric meningiomas.

2. Observation

This was a 12-year-old girl, motherless, referred to the pediatric department of the Hospital Center of Soavinandriana for repeated tonic convulsive seizures, which had occurred for 15 days, evolving in an apyretic context. The general state was preserved at admission. No notion of headache, irradiation or particular personal history had been reported apart from wearing glasses since the age of 5 years. On clinical examination, she weighed 70 kg (BMI = 31), her temperature was 36.8˚C, her heart rate was 100/min and her respiratory rate was 20/min. Biological examinations were normal. She was treated with Tegretol 200 mg, Medrol 16 mg and omeprazole 20 mg. The brain scan showed an extra-axial left frontal tumor process measuring 76 × 60 × 55 mm. The mass was globally oval, with sharp but irregular borders, hypodense center, associated with a peri-lesionel edema that was markedly but non-homogeneously and irregularly enhancing after contrast injection (**Figure 1**). A mass effect on the medial structures was observed with deviation of the midline by 14 mm towards the contralateral side without steno-occlusive or aneurysmal anomalies of the arteries of the polygon

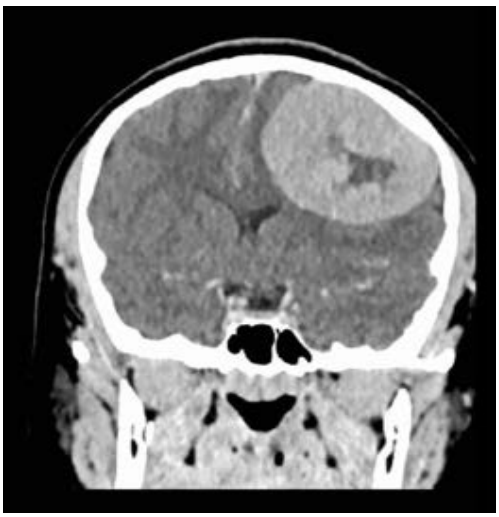

Figure 1. Cerebral Tomodensiometry: oval sharp mass with irregular borders, hypodense center, associated with a peri-lesionel edema. Source: Department of Neurosurgery of Hospital Center of Soavinandriana.

of Willis. The aeration of the sinus cavities of the face was normal. The patient underwent tumor resection. Macroscopically, the operative specimen was found to be 8 firm, lobulated, yellowish-white fragments measuring 14 × 11 × 2 cm and weighing 150 g in total (Figure 2). The histological examination showed a proliferation of meningothelial cells, tending to stratify and roll up on each other in an onion bulb shape, without excess of mitoses or cortical infiltration, suggesting a meningotheliomatous meningioma (Figure 3). The immunohistochemical examination was request as somatostain receptor 2a (SSTR 2a) and epithelial membrane antigen (EMA) but the family's financial situation did not allow it. The evolution of our patient was favorable, without metastasis or other signs of complication until now (3 months after surgery).

Figure 2. Operative specimen of meningioma. Slices of homogeneous whitish cuts. Source: Department of Pathology of Hospital Center of Soavinandriana.

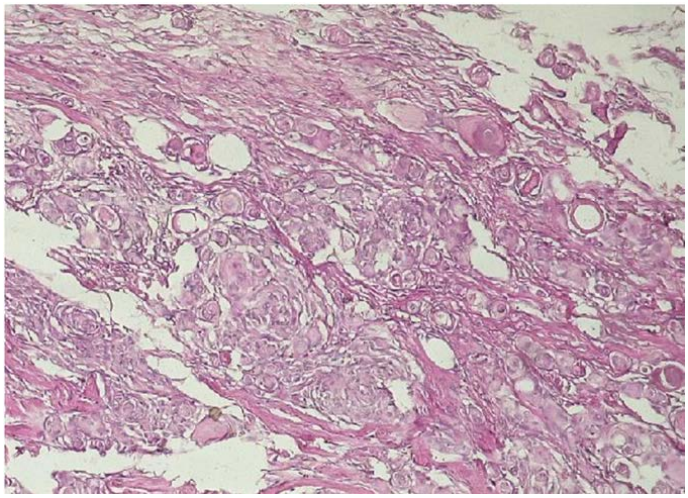

Figure 3. Meningotheliomatous meningioma: proliferation of meningothelial cells, tending to stratify and roll up on each other in an onion bulb shape. HE, ×100. Source: Department of Pathology of Hospital Center of Soavinandriana

3. Discussion

Meningioma is rare in children, representing only 1% - 3% of pediatric intracranial tumors. This rarity was underlined by different authors such as Erdinçler *et al.* [4] and Rochat [7] *et al.* who reported 3 respectively 29 out of 1200 (2.41%) and 22 out of 1543 (1.42%) intracranial tumors in children [4]. In our case it is similar to the literature with a predominance of risk factors in early childhood and adolescence. According to Erdinçler P and coll, Children with meningiomas present late in the first decade or early in the second decade of life [4]. This is the case of our patient because she is twelve years old. Regarding gender, based on study of Samadi N, there is a contrast to adult meningiomas where a female preponderance is seen [8], childhood meningiomas showed a distinct male predominance. The majority of authors agreed on the predominance of the male gender [1]. In our study, we are dealing with report case which was impossible to determine the gender predominance. Regarding the clinical information, our case was revealed by tonic-clinical generalized seizures. This was also observed in the study of Grossbach AJ *et al.* [9]. These signs of discovery could be explained by the fact that during infancy, seizures are more remarkable and the cranium is still expandable in infants and early childhood [9]. Obesity is a risk factor for meningioma [10]. In our case, it was the only risk factor. No notion of irradiation, nor genetic syndrome was noted. In our country, this costly genetic analysis is not yet available. So the eventual presence of genetic pathology was not explored. Samer K *et al.* had mentioned irradiation as a cause of meningioma [6]. Neurological examinations were normal in our case. This agrees with the study of Grossbach AJ *et al.* [9]. The CT in our case showed no calcification, but Grossbach AJ and al noted the presence of calcification [9]. The appearance of calcifications could be due to its histopathological type. It's commonly seen in psamomatous type meningioma and rarely in meningotheliomatous meningioma [11]. Histologically, our case was grade I. Grade II and grade III meningiomas are exceptional in children according to Anne Durand in her thesis [12]. The histological criteria of grade II meningioma according to World Health Organization (WHO) are: the presence of necrosis, prominent nucleoli, cyto-nuclear atypia, hypercellularity and numerous mitosis figures [11]. These criteria were all absent in our case. Meningioma metastases are rare even for grade III tumors and are described in only 1% of intracranial meningioma cases [13] [14]. The evolution of our patient was favorable, without metastasis or other signs of complication until now (3 months after surgery). In meningioma, there is a good correlation between the determination of the histological grade and the expression of the Ki67 antigen, a marker of cell proliferation. This expression is determined by the immunoreactivity technique with the monoclonal antibody MIB-1 [15] [16]. Our patient could not benefit from this immunohistochemical nor genetical examination because of the high cost of the examination, which was not available to the patient. So, there was no diagnostic immunostaining confirmation such as SSTR 2a nor EMA.

4. Conclusion

Meningioma in children remains a rare tumor. In our case, seizures were the only telltale signs of this disease. Obesity is considered as a risk factor for this tumor. Cerebral computed tomography orientates the diagnosis. Pathological examination is essential for confirmation.

Informed Patient Consent

The patient's family agrees to this case study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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