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Surgically Treated Intracranial Meningiomas in Yaounde: a Report of 85 Cases

Méningiomes intracrâniens : à propos de 85 cas opérés à Yaoundé

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ABSTRACT

Introduction. Meningiomas are benign tumours arising mainly from the cells of the arachnoid cap. The aim of this review was to describe the experience of patients operated on in Yaounde. **Materials and methods.** We conducted a cross-sectional study in which the records of all patients operated on at the Yaounde General Hospital (YGH) and the Yaounde Central Hospital (YCH) from January 1, 2014 to January 1, 2020 were included. **Results.** Out of 200 cases of brain tumours, 85 cases of intracranial meningiomas were encountered at the Yaounde General Hospital and the Yaounde Central Hospital, over a period of 6 years. The positive diagnosis was made on CT scan (70% of cases) and Magnetic Resonance imaging (MRI) (30%); the location was the convexity (56.1% of cases), the base (36.3% of cases).The meningiomas were unique in 98.5% of cases. The weight of the tumour was less than 50 g in 30 cases. The quality of the resection was predominantly Simpson I (68%). **Conclusion.** Intracranial meningiomas are frequent tumours in Yaounde. The diagnosis is late and patients are treated with large tumours and irreversible signs such as blindness.

RÉSUMÉ

Introduction. Les méningiomes sont des tumeurs bénignes provenant principalement des cellules de la calotte arachnoïde. L'objectif de ce travail était de décrire l'expérience des patients opérés à Yaoundé. **Matériels et méthodes.** Nous avons mené une étude transversale dans laquelle les dossiers de tous les patients opérés à l'Hôpital Général de Yaoundé (HGY) et à l'Hôpital Central de Yaoundé (HCR) du 1er janvier 2014 au 1er janvier 2020 ont été inclus. **Résultats.** Sur 200 cas de tumeurs cérébrales, 85 cas de méningiomes intracrâniens ont été rencontrés à l'hôpital général et à l'hôpital central de Yaoundé, sur une période de 6 ans. Le diagnostic positif a été porté sur le scanner (70 % des cas) et l'IRM (30 %) ; la localisation était la convexité (56,1 % des cas), la base (36,3 % des cas).Les méningiomes étaient uniques dans 98,5 % des cas. Le poids de la tumeur était inférieur à 50 g dans 30 cas. La qualité de la résection était majoritairement de Simpson I (68%). **Conclusion.** Les méningiomes intracrâniens sont des tumeurs fréquentes à Yaounde. Le diagnostic est tardif et les patients sont soignés avec des tumeurs de grande taille et des signes irréversibles tels que la cécité.

INTRODUCTION

Meningiomas are primitive tumors developed at the expense of arachnoid cells. Meningiomas are distinguished from convexity meningiomas, meningiomas from the falx cerebri, parasagittal meningiomas, basal skull meningiomas and meningiomas of the posterior fossa. Most meningiomas are benign forms, but there are atypical and anaplastic forms.

With neurosurgical practice becoming increasingly common in Yaounde, the rationale of this work was to identify cases of meningiomas operated in recent years, to determine the incidence, circumstances of discovery, diagnosis and anatomopathological forms.

PATIENTS AND METHODS

This was a cross-sectional study where the records of all operated patients at Yaounde General Hospital (YGH) and Yaounde Central Hospital (YCH) from January 1st of 2014 to January 1 of 2020 were included.

RESULTS

During the study period, 85 cases of meningiomas were reported out of a total of 200 cases of operated brain tumours; the other cases were represented by glioblastoma (5%), pituitary adenoma (20%), posterior fossa tumors (7%).

The hospital incidence of meningiomas was 16 new cases/years. The average age of patients was 47 years±13 years (extreme 16-77 years), with a predominance in the 4th and 5th decade.

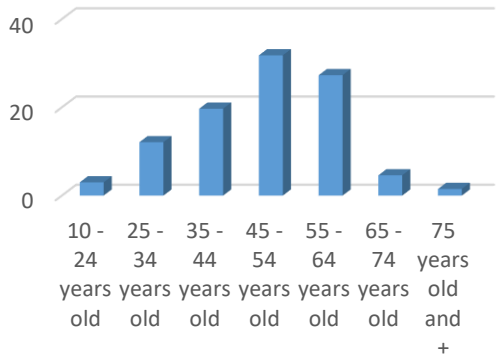


Figure 1 : distribution by age group in the study population

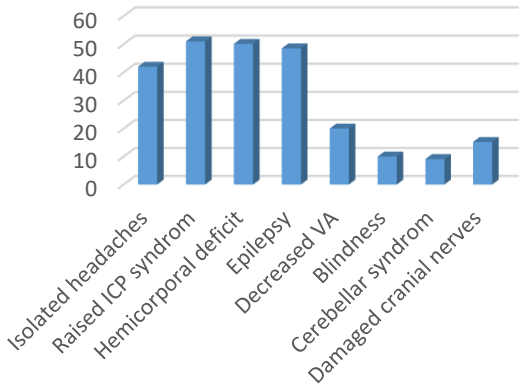
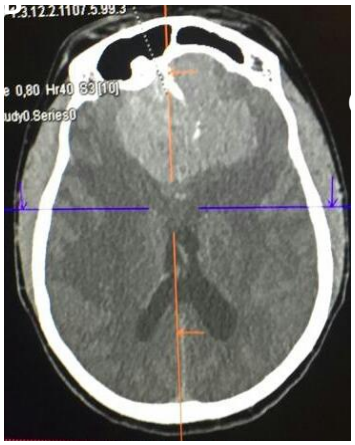


Figure 2 : distribution of clinical symptoms

The sex ratio was 0.32 (1/3 women).
The clinical picture was dominated by isolated headaches (42%), raised ICP syndrome (51%), hemicorporal deficit (50.1%), epilepsy (48.5 per cent of cases), visual disorders (30% of cases) including decreased visual acuity (20% of cases), blindness (10% of cases), cerebellar syndrom (9.1%) and damaged cranial nerves (15.2% of cases).

The positive diagnosis was made on the CT scan (70% of cases) and MRI (30%); location was convexity (56.1% of cases), the base (36.3% of cases), para sagittal (7.6% of cases), the falx cerebri (2%) and the posterior fossa (1.2%).
Meningiomas were unique in 98.5% of cases or multiple in 1.5% of cases.
The tumor was weighed in anatomopathology; the weight of the tumour was less than 50 g in 30 cases, between 50-100 g in 10 cases and between 100-150g in 5 cases with an average weight of 50 g (66.7%). The size was specified for imaging in 37 patients whose largest axis was 3 cm (15 cases), between 3-6 cm (14 cases), between 6-9 cm (8 cases). The coloration was yellowish (57.5%), greyish (7.6%), pinkish (6.1%) unspecified in 28.8% of cases. Histological types: meningioma was Grade I (75.8%), Grade II (21.2%), Grade III (3%).
The treatment was surgical. The quality of the resection was Simpson I (68%), Simpson II (21%), Simpson III (6%), Simpson IV (5%).
In two cases of meningioma with erosion of the base of the skull, the composite Bisglycidil Methacrylate (B-GMA), commonly used by dentists to close teeth (figure 3 A), was used to close the bone defect.

A) Composite (B-GMA), used to close bone defect



B) Axial cerebral CT scan cut with contrast product showing a skull base meningioma inserted on the crista galli process

C) Sagittal cerebral CT scan cut without contrast product showing to a basal skull meningioma

Figure 3: CT scan of meningioma

DISCUSSION

Meningioma is the most common intracranial tumour in Yaounde. This is the case in other sub-Saharan African series such as the one reported in Dakar (1) and Abidjan (2). The incidence of meningioma in the West ranges from 5-8 cases per 100,000 inhabitants. Apart from hospital series, community data are not available in Africa. The female sex is the most affected. This trend can be seen in other African (1, 2, 3, 4) and Western series (3).The average age was 47± 13 years, this result is also found in other series (1), higher in other series (4) as well as most Western series (1, 4). It is rare in children (1, 2, 3, 4, 5, 6). Two cases of very probable meningiomas in children of 3 and 4 years old were identified during the study period but no therapeutic proposal had been proposed due to their very bad localization (petro-clival) and volume(greater than 6 cm long axis).

Diagnosis is late in most African series (2). Indeed; patients arrive at the hospital after a long period of evolution, with an eloquent clinical picture, of large tumors, sometimes posing surgical, anaesthetic difficulties and irreversible signs such as blindness (1, 2, 3, 4).

The basal skull meningioma (Figure 3B and 3C) accounted for 36% of the cases in our series; this is the trend usually observed. They sometimes pose surgical difficulties when they engaine some vasculo-nervous trunks (10). It was in those cases that subtotal resection (Simpson III) was observed.

Histological types (9) were dominated by meningothelial meningioma (36%), fibroblastic (18%), transitional (22%), psammomatous (10%), angiomatous (8%), microcystic (6%). The other cases were Grade II and III meningiomas requiring follow-up for Grade II and adjuvant radiotherapy for Grade III.

The Cerebrospinal Fluid (CSF) leak is the common complication of the surgery of the anterior skull base meningioma. It is due to the opening of the sinus during the approach, the erosion of the sinus wall or roof by the tumor. Sometime, the effort to perform a total removal and coagulation of the insertion zone can created defect and the communication with the sinus. In case of the opening during the surgical approach (frontal sinus cranialization), we obstruted the frontal osteom with fat tissu. In case of defect in the cribriform plate or the sphenoid body, we used bis GMA to reconstruct the defect. The BGMA was used to close bone defects at the skull base (6). Thus, in case of bone erosion, this easy-to-use material was adopted. It is an effective and safe way to prevent CSF leak and pneumocrane.

The malignant form of meningioma (anaplasic) are rare (7,8). Radiation therapy was immediately prescribed in cases of grade III meningioma (2 cases). Grade II tumours (14 cases) were monitored, then reoperated and irradiated in case of recurrence (2 cases).

CONCLUSION

Intracranial meningiomas are common tumours in Africa. Diagnosis is late and patients are cared for with large tumors and irreversible signs such as blindness. These large tumors can cause surgical or anaesthetic problems due to the extent of bleeding or poor preoperative KARNOFSKY score. Further studies are needed to assess the evolution of these patients, including atypical forms.

DECLARATIONS

Ethics approval and consent to participate : Not applicable

Consent for publication : Not applicable

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REFERENCES

1- Alioune B ; Kessely Y, Thioub M, Mbaye M, Ndoye N, Codeba M. Notre experience de méningiomes intracrâniens à Dakar : à propos de 50 cas. The Panafrican Medical Journal.2015 ; 20(6) :56-67.

2- N'Dri Oka D, Broalet E, Kabou M, Broalet P, Haidara A, Boni N. Les méningiomes intracrâniens en milieu ivoirien, étude d'une série chirurgicale. African Journal of Neurological Sciences 2008 ; 27(1) :150-62.

3- Hima-Maiga A, Vaz G, Kelani AB, Abdoulwabab I, Diop A, Samoussi D al. Aspects cliniques, paracliniques, histologiques, et thérapeutiques des méningiomes intracraniens aux cliniques universitaires Saint-Luc de Bruxelles. The Journal of Medecine and Health Sciences.2020 ; 9(21) :26-32.

4- Sakho Y, Holden F, Ndoye N, Ba M, Diene M, Badiane S et al. Chirurgie des Méningiomes intracrâniens dans une unite de Neurochirurgie de Dakar. African Journal of Neurological Sciences. 2005 ; 24(1) : 65-6.

5- Djientcheu V, Haman O, Bito, Ndome O, Guegang G. Les tumeurs cérébrales : quel algorithme pour une prise en charge utile et déficiente à l'hôpital Central de Yaoundé. Revue Africaine de Chirurgie et Spécialités. 2019 ; 13(1) ; 28-35.

6- Djientcheu V, Fankem C, Halalmeh R, Ewo C, Sandio A, Haman O, Moisi M, Sosso A. Utilisation d'un composite de bisphénol A-glycidyl méthacrylate dentaire pour réparer les fuites de liquide céphalo-rachidien réfractaire associées à des défauts de la base antérieure du crâne à grande échelle. Journal of Craniofacial Surgery. 2021 ; doi : 10.1097/SCS.0000000000007568.

7- Reganni A, Bachir B. Méningiomes intracrâniennes [thèse], Algérie : Faculté de Médecine Dr. B. Benzerdjeb ; 2014.108p.

8- Ouédraogo S, Ramdé N, Traoré C, Konségré V, Lamien-Sanou A. La place des méningiomes dans les tumeurs du système nerveux central au centre hospitalier universitaire Yalgado. Journal Africain du Cancer.2014 ; 6 : 235-39.

9- Kleihues P, Sobin L. World Health Organization Classification of tumors Cancer, 2000; 88: 75-87.

10- Simpson D, Recurrence of intracranial meningiomas. The Journal of Neurosurgery and psychiatry.2017; 20(17):22-39.