

# Demographic and Interventional Pattern of Pediatric Brain Tumors Managed at UDUTH Sokoto: A Decade Review

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## ABSTRACT

**BACKGROUND:** The Epidemiologic pattern of childhood brain tumours during the past ten years in Usmanu Danfodiyo University Teaching Hospital Sokoto was reviewed.

**OBJECTIVE:** The aim of the study is to describe the epidemiological profile, diagnoses and pattern of paediatrics brain tumour.

**METHODS:** This is a retrospective study analyzing the demographic profile, clinical diagnoses and operative interventions of paediatric neurosurgical patients managed at our center over a period of 10years, from January 2007 to December 2016 with Brain Tumour.

**RESULT:** A total of 81 patients had operative interventions during the study period. Forty-three (43) patients were males representing 53.1%, thirty-eight (38) were female with male to female ratio 1.1:1; the majority of them were between 5 and 8 years of age thirty (37%) and most of them are infratentorial forty-eight (48) accounting for 59.3%. Medulloblastoma was the predominant diagnosis accounting for eighteen cases (18) 22.2%. Ventriculo-peritoneal shunt insertion was the commonest procedure performed representing 44.4%.

**CONCLUSION:** Infratentorial tumours are the commonest paediatric tumours seen in our center, with medulloblastoma accounting for the majority of cases. VP shunt is the commonest neurosurgical intervention on paediatric brain tumor patients

**KEY WORDS:** Paediatric; Brain tumor; Medulloblastoma; Infratentorial; Supratentorial; Ventriculoperitoneal shunt

## INTRODUCTION

Among childhood cancers, brain tumours are the second most common tumours, and the most common solid paediatrics tumour. Incidence ranges from less than 10% in Uganda to 35% in the USA.<sup>1,2,3</sup>. Data on demographic and interventional pattern of paediatric brain tumor are limited in our environment. Therefore, the aim of this study is to review and describe the epidemiological profile of brain tumours in 81 children with radiological diagnosis of brain tumours who had surgical intervention at Usmanu Danfodiyo University Teaching Hospital Sokoto. Those patients who had no any form of neurosurgical intervention were excluded.

## PATIENTS AND METHODS

This is a retrospective descriptive study of all Paediatrics neurosurgical patients who had radiological diagnosis of brain tumour at the regional centre for Neurosurgery, Usmanu Danfodio University Teaching Hospital Sokoto over a period of 10years, from January 2007 to December 2016. Patient's demographics profile (Sex and Age), clinical characteristics (Diagnosis, location of the pathology and the intervention), and the type of neurosurgical operative intervention were obtained from the theatre operative records. The data was entered in SPSS version 20. Descriptive statistics were used to calculate means ±

standard deviation for quantitative variables i.e., age. Frequencies with percentage were calculated for qualitative variables, i.e., gender, pathology and neurosurgical operative intervention.

## RESULTS

A total of 81 paediatric patients had neurosurgical operative intervention at the regional center for Neurosurgery Usmanu Danfodio University Teaching Hospital Sokoto over a period of 10 years, from January 2007 to December 2016.

**GENDER DISTRIBUTION** Males were predominant, 53.1% (n = 43) were males and 46.9% (n = 38) were female, with M: F of 1.1: 1. Age Distribution the majority of them were between 5 and 8 years of age (37%).

## PATHOLOGICAL DISTRIBUTION BASED ON SITE

Infratentorial tumours were the majority, 59.3% (n=48), supratentorial were 40.7% (n=33)

## SPECTRUM OF DIAGNOSIS

Medulloblastoma was the predominant diagnosis (Table 3) accounting for 22.2% (n=18) of cases, there were 1.2% (n=1) cases each for glioma, vestibular schwannoma and pituitary macroadenoma. 17.3% (n=14) were cases of Astrocytoma, craniopharyngioma accounts for 16.1% (n=13), fronto-orbital tumour, pineal gland tumour and brainstem glioma accounts for 8.6% (n=7) each. There are 10% (n=8) cases of ependymoma and 2.5% (n=2) cases of suprasellar tumour.

## INTERVENTION

Majority 44.4% (n=36) had ventriculo peritoneal shunt, 26% (n=21) had craniotomy with tumour excision, 18.5% (n=15) had craniectomy with tumour excision, 2.5% (n=2) had cyst aspiration, 2.5% (n=2) burr biopsy, 1.2% (n=1) had EVD, 1.2% (n=1) endoscopic biopsy + diathermy fulguration, and 3.7% (n=3) had Rickham reservoir insertion.

Table 1: Demographic profile

Variables	Frequency(percentage)
SEX	
Male	43(53.1)
Female	38(46.9)
AGE (years)	
0-4	19(23.5)
5-8	30(37)
9-12	23(28.4)
13-16	9(11.1)
TOTAL	81(100)

Table 2: Distribution of pathologies based on site

Location of tumour	Frequency(percentage)
Supratentorial	33(40.7)
Infratentorial	48(59.3)
Total	81(100)

Table 3: Spectrum of Diagnosis

Tumour type	Frequency(percentage)
Medulloblastoma	18(22.2)
Craniopharyngioma	13(16.1)
Astrocytoma	14(17.3)
Oligodendroglioma	2(2.5)
Fronto-orbital tumour	7(8.6)
Brainstem glioma	7(8.6)
Pineal gland tumour	7(8.6)
Pituitary macroadenoma	1(1.2)
Glioma	1(1.2)
Suprasellar tumour	2(2.5)
Ependymoma	8(10)
Vestibular Schwannoma	1(1.2)
Total	81(100)

Table 4: Interventions

Intervention	Frequency(percentage)
Craniotomy + tumour excision	21(0)
Endoscopic biopsy + diathermy fulguration	1(1.2)
V- P shunt insertion	36(44.4)
Cyst Aspiration	2(2.5)
Burr hole biopsy	2(2.5)
Craniectomy+ tumour excision	15(18.5)
Rickham reservoir	3(3.7)
EVD	1(1.2)
Total	81(100)

## DISCUSSION

The demographic profile, diagnoses and type of operative intervention for 81 paediatrics patients had operative intervention for brain tumour from January 2007 to December 2016 at our centre were reviewed.

Majority of our patients were males, accounting for 43 patients (53.1%). This is similar to the findings by E.O Uche *et al* at University of Nigeria Teaching Hospital Enugu, Nigeria,<sup>4</sup> However, Ndubuisi *et al* in their study at Memfys hospital for neurosurgery Enugu and Uwaezuoke *et al* at University of Nigeria Teaching Hospital Enugu, Nigeria founds female preponderance among paediatric patients with brain tumours.<sup>5,6</sup>

Medulloblastoma was the commonest case seen in s 22.2% (18) similar to study Karkouri *et al*, at Centre Hospitalier Universitaire, Morocco.<sup>7</sup>, however in study by Elhaj *et al* at National Cancer Institute, University of Gezira (NCI-UG) in the central of Sudan.<sup>8</sup>

Majority of our cases were infratentorial tumours 59.3% (48), this is in contrasted with the study by Stagno *et al* at Cure Childrens Hospital of Uganda in which majority of cases were supratentorial.<sup>9</sup>

## CONCLUSION

The spectrum of operative interventions in our center correlates with the pattern from other studies in low-medium income countries. Although ventriculoperitoneal shunt is the commonest surgical intervention in our study, Medulloblastoma was the commonest case seen in our study Majority of our cases were that of infratentorial tumours.

## Declaration by Authors

**Ethical Approval:** Ethical approval was sought and obtained from the Hospital's ethical committee.

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**Conflict of Interest:** The authors declare no conflict of interest.

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