

Determine the Outcome of Encephalocele Surgery in Children

SAFDAR HUSSAIN ARAIN¹, HAMID AKBAR SHAIKH², NAJM-US-SAQIB³¹Assistant Professor & Head Department of Neurosurgery, Per Syed Abdul Qadir Shah Jillani Institute of Medical Sciences, Gambat,²Assistant Professor of Neurosurgery, Peoples University of Medical & Health Sciences for Women, Nawabshah,³Consultant Neurosurgeon, DHQ Hospital Bhakkar

Correspondence to Dr. Safdar Hussain Arain Email: drsafdararain@gmail.com

ABSTRACT

Aim: To examine the outcome, patterns and epidemiological features of encephalocele surgery in pediatric population.

Study Design: Prospective/Observational

Place & Duration of Study: Department of Neurosurgery, Per Syed Abdul Qadir Shah Jillani Institute of Medical Sciences, Gambat from 1st January 2018 to 30th June 2018.

Methods: 13 patients of both genders of encephalocele were treated during the study period. Patients detailed history, epidemiological features and patterns and outcomes of encephalocele surgery was examined after taking informed consent from the entire patients 'guardians' i.e mother, father. Data was analyzed by SPSS 19.0.

Results: Out of 13(100%) patients, 9(69.23%) patients were male while 4(30.77%) patients were females. 4 (30.77%) patients were ages 1 to 4 days and 9(69.23%) patients had ages 5 to 10 days. Most common type of encephalocele was occipital found in 8 (61.54%) patients. Associated anomalies such as meningomyelocele, chiari 3 malformation, syrinx, dermal sinus tract and limited-dermal myeloschisis in 3, 2, 3, 1 and 1 patients respectively. No immediate death was recorded during and after surgery.

Conclusion: It is concluded that early surgical treatment of encephalocele in children provide better outcomes in terms of cosmetic, rupture and future neurological disabilities.

Keywords: Encephalocele, Surgical treatment, Types of encephalocele, Mortality, Newborn Children

INTRODUCTION

Encephalomeningocele is a congenital malformation described by protrusion of meninges or brain tissue due to a skull defect. Encephalocele is one of the type of neural tube injury/disorder and the other two form is anencephaly and spina bifida¹.

In neuro surgical settings congenital disorder varies high rate of prevalence due to unawareness. Some of researches demonstrated that environmental factors are the major cause of this malignant disorder.²⁻⁴ So far, only aflatoxin has been proposed to be a teratogenic agent for this anomaly.² Ambiguous findings from its firmly related anomaly, spina bifida⁵ may suggest the role of folate deficiency in encephalomeningocele. However, again, there were no studies on the relationship between maternal folate level and incidence of encephalomeningocele, and some evidences have suggested different underlying mechanisms between these two forms of neural tube injuries.⁶⁻⁸ This study was conducted to examine the outcome, patterns and epidemiological features of encephalocele surgery in pediatric population. Also aimed to provide better treatment and to reduce the morbidity and mortality rate.

MATERIALS AND METHODS

This prospective/observational study was conducted at Department of Neurosurgery Department of Neurosurgery, Per Syed Abdul Qadir Shah Jillani Institute of Medical Sciences, Gambat from 1st January 2018 to 30th June 2018. A total 13 cases of both genders were included.

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Patient's ages were 1 day to 10 days. All patients had undergone encephalocele surgery. Patients detailed history, epidemiological features, patterns and outcomes of encephalocele surgery was examined after taking informed consent from the entire patients 'guardians' i.e. mother, father. Parents/Guardians of patients whom were not willing to participate were excluded from this study. Post-operative mortality was examined at immediate, 3 and 6 months. All the statistical data was analyzed by SPSS 19.

RESULTS

There were 9(69.23%) male patients while 4(30.77%) patients were females. Four (30.77%) patients were ages 1 to 4 days and 9(69.23%) patients had ages 5 to 10 days (Table 1). Most common type of encephalocele was occipital found in 8(61.54%) patients, 3(23.08%) patients had occipital-cervical encephalocele, 1(7.69%) patient had parietal, 1(7.69%) had fronto nasal encephalocele (Table 2).

Table 1: Age and gender wise distribution of all the patients

Variable	No.	%
Gender		
Male	9	69.23
Female	4	30.77
Age (days)		
1 – 4	4	30.77
5 – 10	9	69.23

Table 2: Types of encephaloceles in patients

Types	No.	%
Occipital	8	61.54
Occipital Cervical	3	23.08
Parietal	1	7.69
Fronto-nasal	1	7.69

Associated anomalies such as meningomyelocele, chiari 3 malformation, syrinx, dermal sinus tract and limited-dermal myeloschisis in 3, 2, 3, 1 and 1 patients respectively. No immediate death was recorded after surgery. Follow-up was taken at 3 and 6 months after surgery. 2 patients were died at 6 months 1 had chiari 3 malformation and 1 had syrinx (Tables 3-4).

Table 3: Associated anomalies to encephalocele

Anomalies	No.	%
Chiari 3 malformation	3	23.08
Meningomyelo	2	15.38
Syrinx	3	23.08
Dermal-sinus	1	7.69
Limited-dermal	1	7.69

Table 4: Outcomes after surgical treatment

Outcome	No.	%
Surgical site infection		
Found	1	7.69
Not Found	12	92.31
Cerebral spinal fluid leak		
Yes	3	23.08
Not Found	10	76.92
Mortality		
Immediate	-	-
At 3 months	1	7.69
At 6 Months	1	7.69

DISCUSSION

World-wide, In neurosurgery Encephaloceles represents a congenital defect of the cranium in which a portion of central nervous system herniates through the defect.⁹ Occipital encephaloceles can vary from a small swelling to extremely large one. In our study, the occipital was the most common site found. The contents of the sac vary from small dysplastic diverticulum to a large amount of degenerative brain tissue.. In our study male patient's ratio was high 69.23% as compared to females. These results shows similarity to some other studies regarding encephalocele surgery reported males patients population was high as compared to females. 50 to 70%.¹⁰⁻¹²

In this study, patients ages were ranging from 1 day to 10 days. Multiple studies reported patients ages less than 1 month had high rate of encephalocele^{13,14}. In this study, we observed that most common type of encephalocele was occipital found in 61.54% patients. Occipital-cervical, parietal and fronto-vasal after to occipital was found. In many of studies regarding encephalocele surgery demonstrated similar results to our study in which most commonly found type was occipital^{15,16}.

In our study, we observed that mostly children were delivered by cesarean section delivery mode. These results show similarity to other studies¹⁷. We found no immediate mortality after surgical treatment of encephalocele. We found surgical site infection only in one patient and that was repair after management, we also found cerebral spinal fluid leak in 1 patient. In our study, follow-up was taken at 3 and 6 months after surgery. 2 patients were died at 6 months 1 had chiari 3 malformation and 1 had syrinx due to unknown causes. Some other studies reported no immediate mortality and no severe surgical complications^{18,19,20},

Our study shows better results regarding mortality and complications. This study will be helpful for better treatment and to reduce the mortality rate.

CONCLUSION

Early surgical treatment of encephalocele in children provides better outcomes in terms of cosmetic, rupture and future neurological disabilities. We also concluded that the most common type of encephalocele was occipital. No procedural complications were observed also no immediate mortality found in our study.

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