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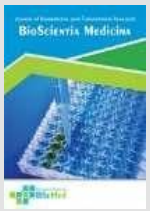

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Overview of the Characteristics of Meningocele Patients at Dr. Kariadi General Hospital, Semarang, Indonesia

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A B S T R A C T

Background: Meningocele is a medical condition where there is a defect in the spinal area, which allows protrusion of cerebrospinal fluid through the defect. Although epidemiologically, this case is relatively small, given the potential for high morbidity and mortality caused by this disorder, it becomes urgent for further exploration regarding meningocele. This study aimed to provide a clinical picture of meningocele patients at Dr. Kariadi General Hospital, Semarang, Indonesia. **Methods:** This study was a descriptive observational study. A total of 12 meningocele patients participated in this study. Observation of clinical data and management of meningocele patients was carried out in this study. Univariate analysis was carried out with the help of SPSS software. **Results:** The mean age of the patients when they were first treated was 533 days, and the average age when they were first operated on was 191.5 days. Meningocele patients have an average hospital stay of 16.5 days. The majority of patients are male. The majority of meningocele patients have congenital limb anomalies. The majority of patients have a neural tube defect located in the lumbosacral region. The majority of meningocele patients have no infectious complications, and the majority receive VP-shunt placement. **Conclusion:** Meningocele patients at Dr. Kariadi General Hospital, Semarang, Indonesia, mostly have an overview of the location of neural tube defects in the lumbosacral region and have complications of limb anomaly.

1. Introduction

Meningocele is a medical condition where there is a defect in the spinal area, which allows protrusion of cerebrospinal fluid through the defect. Defects in the spinal area are generally caused by failure to close the neural tube in the process of embryogenesis during pregnancy. This congenital disorder certainly causes high mortality and morbidity. Various studies show that the morbidity of meningocele cases is quite high. Some studies even show that the Mongolian race has a much greater incidence of meningocele than other races.[1-5]

Meningocele causes infection of the meninges and cerebrospinal fluid, which is quite severe. Defects in the spine become the entry point for various microorganisms into the cerebrospinal region. Infection of the cerebrospinal region causes failure of the nervous system in coordinating various body activities. Meningocele causes a high enough death if there are complications of infection in the cerebrospinal region. If the meningocele patient survives the infection in the central nervous system, the potential for enormous disability overshadows the survivors of this meningocele disorder. Although

epidemiologically, this case is relatively small, given the potential for high morbidity and mortality caused by this disorder, it becomes urgent for further exploration regarding meningocele.[6-12] This study aimed to provide a clinical picture of meningocele patients at Dr. Kariadi General Hospital, Semarang, Indonesia

2. Methods

This study was a descriptive observational study and used secondary data obtained from the medical records installation of Dr. Kariadi General Hospital, Semarang, Indonesia. A total of 12 meningocele patients during the period January - December 2020 were included in this study by total sampling. This study was approved by the medical and health research ethics committee at Dr. Kariadi General Hospital, Semarang, Indonesia.

This study observed the sociodemographic features of meningocele patients, such as age and gender. In addition, this study presents clinical features, complications, management, and length of stay in meningocele patients. Data analysis was performed with the help of SPSS version 25. Univariate analysis was performed to present the frequency distribution of each observation variable.

3. Results

Table 1 shows an overview of the characteristics of meningocele patients at Dr. Kariadi General Hospital, Semarang, Indonesia. The mean age of the patients when they were first treated was 533 days, and the average age when they were first operated on was 191.5 days. Meningocele patients have an average hospital stay of 16.5 days. The majority of patients are male. The majority of meningocele patients have congenital limb anomalies. The majority of patients have a neural tube defect located in the lumbosacral region. The majority of meningocele patients have no infectious complications, and the majority receive VP-shunt placement.

4. Discussion

The results of this study indicate that some meningocele patients have neural tube defects in the lumbosacral region. These clinical findings are in line with several studies which state that the majority of neural tube defects occur in the lumbosacral region. The neural tube should undergo a closing process after the process of embryogenesis in the third trimester of pregnancy. However, due to several causes, such as exposure to toxic compounds during pregnancy or due to folic acid malnutrition, the process of closing the neural tube fails. As a result of this imperfect closure, it leaves a defect, the majority of which are found in the lumbosacral area. As a result of the defect in the lumbosacral area, it causes accompanying complications in the form of limb anomaly. Several studies suggest that the closure of the neural tube plays an important role in the successful process of lower limb development. Failure to close the neural tube causes failure of the lower limb formation process. The results of this study are in line with the theory, which states that impaired lumbosacral neural tube closure is associated with failure of limb formation.[13-16]

The results of this study also show that the average patient comes for the first hospitalization at the age of 533 days or almost 2 years of age. Several studies state that the arrival time for hospitalization related to meningocele is quite late. Ideally, a meningocele is responded to, and immediate efforts are made for action and management. The delay was not only during the first hospitalization but also the delay occurred in the first attempt at surgery. More comprehensive efforts are needed regarding early detection and vigilance from various parties related to meningocele.[17-20]

Table 1. Overview of the characteristics of meningocele patients at Dr. Kariadi General Hospital, Semarang, Indonesia.

Variable	Frequency / Mean
Age at first treated (days):	
Mean±SD	533±5,7
Youngest age	2
Oldest age	4371
Age at first surgery (days):	
Mean±SD	191,5±2,6
Youngest age	2
Oldest age	1456
Length of stay in hospital (days):	
Mean±SD	16,5±2,3
The shortest length of treatment	5
The longest length of treatment	48
Gender:	
Male	8
Female	4
Presence of other congenital abnormalities:	
No	4
Atresia ani	1
Cardiovascular defect	2
Tracheoesophageal fistula	0
Kidney anomaly	1
Limb anomaly	5
Intracranial lesion	1
Combination of 2 anomalies	4
Combination > 2 anomalies	4
Location of neural tube defect:	
Lumbosacral region	7
Supranasal region	1
Frontoethmoid region	1
Nasoethmoid region	1
Occipital region	1
Thoracolumbal region	1
Infection complications:	
Yes	4
No	8
VP-shunt placement:	
Yes	8
No	4

5. Conclusion

Meningocele patients at Dr. Kariadi General Hospital, Semarang, Indonesia, mostly have an overview of the location of neural tube defects in the lumbosacral region and have complications of limb anomaly.

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