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The Description Of *Post-Dural Puncture Headache* In Post-Caesarean Section Patients Undergoing Spinal Anaesthesia At RSUD Cilacap

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Abstract: The high maternal mortality rate associated with childbirth remains a critical concern in the healthcare sector. One method employed to address delivery complications is the caesarean section. However, the use of spinal anaesthesia in this procedure can result in complications, including *Post dural puncture headache* (PDPH). PDPH can affect patients' postoperative activities and recovery, necessitating a deeper understanding of its incidence and contributing factors. This study aims to describe the incidence of PDPH in post-caesarean section patients at Cilacap Regional Public Hospital, as well as to understand the factors affecting the occurrence of PDPH and the pain levels experienced by patients postoperatively. A quantitative appchach with a descriptive design was utilized in this study. The research sample comprised post-caesarean section patients who received spinal anaesthesia at the hospital. Data were collected through direct observation and interviews, using observation sheets and the *Numerical rating scale* (NRS) to measure pain levels. The results indicated that among the total patients who underwent caesarean section with spinal anaesthesia, a portion experienced PDPH with varying pain levels. Specifically, 17 respondents (56.7%) experienced PDPH, while 13 (43.3%) did not. Factors influencing the occurrence of PDPH included age, body mass index (BMI), number of punctures, needle size, and previous history of PDPH. This study concludes that the incidence of PDPH in post-caesarean section patients is significant, with certain factors contributing to the risk of developing PDPH. The findings of this research contribute to a deeper understanding of PDPH complications in post-caesarean section patients and provide a basis for future research development in this field.

Keywords: Spinal Anaesthesia, Post-dural puncture headache, Caesarean Section.

Introduction

The maternal mortality rate is still very high, according to the World Healt Organization (WHO) report in 2020 around 287,000 people. Almost 75% of maternal deaths are caused by severe bleeding (after childbirth), infection, high blood pressure (preeclampsia and eclampsia), birth complications, and unsafe abortion. The rest are caused by comorbidities during pregnancy[1]. Sectio caesaria is a surgical procedure in which the fetus is delivered through an incision in the abdominal wall and uterine wall[2]. Nowadays, sectio caesarean is a much safer way to deal with complications in labor. The International Obstertic Anaesthesia Guidelines recommend the use of spinal or epidural anesthesia in most cases of cesarean delivery[3]. Regional anesthesia is chosen because general anesthesia has a risk of intubation failure and aspiration of gastric contents. In addition, general anesthesia may increase the need for neonatal resuscitation[4]. However, the use of spinal anesthesia should be done with caution as

it can lead to a serious risk of complications for both mother and fetus. PDPH is a common complication after lumbar puncture. According to the International Headache Society, PDPH is defined as a type of headache that worsens when sitting or standing, improves when lying down, is accompanied by at least one other symptom, such as neck stiffness, ringing in the ears/tinnitus, hearing loss, photophobia, nausea, and has a history of dural puncture. The prevalence of PDPH is higher in pregnant women. Headache occurs as a result of perforation or laceration of the dura mater resulting in leakage of cerebrospinal fluid (CSS). The signs and symptoms of PDPH are caused by CSS leakage leading to reflex dilation of blood vessels in the brain. Factors affecting the frequency and extent of PDPH include the age of the patient, type and size of spinocan needle, number of punctures and experience of the physician and anesthesiologist[5]. The purpose of this study was to understand the description of factors affecting the incidence of PDPH in Sectio caesaria patients based on age, BMI, number of punctures, needle size, history of PDPH and identify the pain level of post-Sectio caesaria patients with spinal anesthesia who experienced PDPH.

Subjects and Methods

This research method is descriptive with sampling using accidental sampling technique is a sampling technique by sampling anyone who happens to meet the researcher and is deemed suitable as a data source, then the subject is sampled. In this study, the subjects used were patients after Sectio caesaria with spinal anesthesia at Cilacap Hospital who met the inclusion and exclusion criteria, while the research was carried out from April 15, 2024 to May 15, 2024 in the central surgical installation and rose room of Cilacap Hospital. Research data were obtained from medical record data and the results of direct interviews with patients and filling out NRS sheets to determine the level of PDPH pain. The data obtained were recorded in the research sheet, then editing, coding and data entry were carried out, then statistical analysis was carried out. Univariate analysis which includes descriptive analysis to understand the characteristics of respondents, the number of respondents experiencing PDPH and the level of PDPH pain scale. Data that has been recorded in the research sheet is then processed using the statistical product and service solution (SPSS) program version 26.0 for Windows.

Results and Discussion

This study was conducted at RSUD Cilacap from April 15, 2024 to May 15, 2024. Data collection was done by observation and interview with respondents after Sectio Caesaria. Based on the results of the study, most patients experienced Post Dural Puncture Headache (PDPH). Of the total 30 respondents, 17 of them (56.7%) experienced PDPH, while 13 respondents (43.3%) did not.

Table 1. Characteristics of Research Respondents

Characteristics	Frequency	Percentage (%)
Age		
Early adulthood 20-29 years	13	43,3

Middle Adult 30 - 49 years	17	56,7
IMT		
Normal 18.5 - 25.0	16	53,3
Mildly overweight 25.1-27.0	1	3,3
Severe overweight > 27.0	13	43,3
History of PDPH		
Available	11	36,7
Not available	19	63,3
Needle Size		
No.25	16	53,3
No. 26	14	46,7
Number of Stabs		
one stitch	16	53,3
more than one stitch	14	46,7

Table 2. Distribution of Factors based on PDPH incidence (n=30)

Characteristics	PDPH	NOT PDPH
Age		
Early adulthood 20-29 years	8	5
Middle Adult 30 - 49 years	9	8
IMT		
Normal 18.5 - 25.0	8	8
Mildly overweight 25.1-27.0	0	1
Severe overweight > 27.0	9	4
History of PDPH		
Available	10	1
Not available	7	12
Needle Size		
No.25	10	6
No. 26	7	7
Number of Stabs		
one stitch	8	8
more than one stitch	9	5
NRS Pain Scale		
Light 1-3	4	13
Medium 4-6	9	
Heavy 7-10	4	

Based on table 2, it was found that the highest incidence of PDPH occurred at the age of 30-35 years, as many as 9 respondents (53%). Respondents with severe overweight (BMI> 27) more often experience PDPH, respondents who have a history of PDPH also often experience PDPH after the next dural puncture. The use of needle no.25 causes more PDPH than needle no.26. In this study, respondents who experienced more than one dural puncture experienced more PDPH.

Respondents who were classified as PDPH by considering the PDPH diagnostic criteria were measured on a pain scale using NRS with the most results experiencing moderate pain in the 4-6 range with 9 respondents (53%).

Based on the results of the study, most patients experienced Post Dural Puncture Headache (PDPH). Of the total 30 respondents, 17 of them (56.7%) experienced PDPH, while 13 respondents (43.3%) did not. The most common complaints reported by the 17 respondents who experienced PDPH were neck stiffness, tinnitus, hypacusia, photopobia and nausea. The results of the study obtained, in line with research conducted by Ljubisavljevic et al., (2020) which showed that 52.8% of respondents experienced PDPH. In addition, research by Dwiyanto (2020) showed that the incidence of PDPH was 95%. Recent research from Rodríguez-Camacho et al., (2023) also supports these findings by stating that 87.7% of respondents experienced PDPH with varying degrees of pain and characteristics. Based on the results of the study, the prevalence of PDPH was higher in the age category of 30-49 years as many as 9 out of 17 respondents (53%). In this study, patients who experienced PDPH were not only influenced by age but were influenced by other factors, namely BMI, history of PDPH, needle size, and number of stabs.

Normal body mass index (BMI) with excess BMI causes PDPH with a slight difference. In normal BMI, 8 respondents (47%) experienced PDPH and 9 respondents (53%). Other literature states that the weight gain of each pregnant woman is not the same, depending on the mother's Body Mass Index (BMI) before pregnancy. Another researcher's opinion the higher the BMI, the higher the intraabdominal pressure generated which has an impact on reducing CSS volume and increasing the chance of PDPH[6]. The research data showed that patients who had experienced FMD experienced more FMD with a total of 10 respondents (58.8%) compared to patients who did not have a history of FMD. Patients who have experienced FMD in the past are said to be two to three times more likely to experience FMD in the future compared to those who have never experienced FMD [7]. Large diameter spinal needle sizes have the potential to cause greater perforation of the dura mater, which increases the likelihood of Post Dural Puncture Headache (PDPH). In contrast, smaller diameter needles tend to cause smaller dura perforations and may reduce the risk of PDPH [8]. The use of very thin needles can be technically difficult which then leads to repeated punctures and increases the risk of PDPH. Respondents who experienced PDPH were respondents who experienced more than one puncture as many as 9 respondents (53%). This gives credence to the conclusion of a study that repeated stabbing is a risk factor for PDPH.

In accordance with the theory that PDPH is caused by cerebrospinal fluid that leaks because of the former duramater puncture. After being divided into PDPH and non-PDPH groups, respondents in this study were assessed using the numerical rating scale (NRS) pain scale, which is divided into three categories. The results of this study showed 4 respondents (23.5%) experienced mild pain, 9 respondents (53%) experienced moderate pain and 4 other respondents (23.5%) experienced severe pain. The level of PDPH pain in each respondent is influenced by other factors such as age, BMI, history of PDPH, needle size, and number of stabs.

Conclusion

1. Based on characteristics, the incidence of PDPH in patients undergoing cesarean section with spinal anesthesia at Cilacap Regional Hospital was 17 respondents (56.7%) while those who did not experience PDPH were 13 respondents (43.3%). The highest number of PDPH based on the age factor in this study was more at the age of 30-49 years as many as 9 respondents (53%). In the IMT factor in this study, 9 respondents (53%) experienced PDPH in excess IMT. Respondents who experienced stabbing more than once were 9 respondents (53%). In this study, the use of needle number 25 (58.8%) caused more PDPH compared to the use of a smaller needle, namely number 26 (41.2%). Research data shows that patients who have experienced FMD experience more FMD with a total of 10 respondents (58.8%) compared to patients who do not have a history of FMD.
2. The pain scale in this study was highest in the moderate pain scale as many as 9 (53%), while the mild pain scale was 4 (23.5%), and severe pain was 4 (23.5%).

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