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Applying the number 27 pencil point needle model and and green tea in preventing post dural puncture headache in patients of spinal anesthesia post cesarean section

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Abstract
Childbirth with cesarean section was chosen in Indonesia because it did not have pain due to anesthesia. The impact of spinal anesthesia on the cesarean section is a headache after dural puncture (PDPH). However, there is still limited use of non-pharmacological therapies in preventing PDPH events. This study aims to examine and analyze the effects of use using pencil point number 27 or 25 and the provision of green tea 2 hours post operation on PDPH events. This research is a simple experiment of Post Test Only Control Group Design to compare PDPH incidence in 32 women giving birth with spinal anesthesia cesarean section surgery. This is divided into two groups using number 25 pencil point needle and giving green tea 2 hours post-surgery (n = 16) and using pencil point number 27 and giving green tea 2 hours post operation (n = 16). Data were analyzed using chi-square and Mann-Whitney. The results of the bivariate analysis of PDPH shows, two groups of respondents who were given regional anesthesia utilizing the pencil point type number 27 and the provision of green tea 2 hours post operation with the group of respondents who used pencil point number 27 and the arrangement of green tea 2 hours post = 0.001. The results of the VAS scale bivariate analysis between the two groups was p = 0.002. The results of the use of pencil point needle number 27 and the provision of green tea 2 hours after spinal anesthesia cesarean section were effective in reducing the incidence of PDPH.

Keywords: post-dural puncture headache, pencil point needle, green tea

1. Introduction
The rapid advancement of technology as it is now has changed the lifestyle, and socio-economics of the Indonesian people which have resulted in a transition of perspective in determining a health-related action, including cesarean section is considered not sick prestige, cosmetic reasons and so on. The use of general anesthesia is often associated with higher maternal risk than regional anesthesia. Spinal anesthesia is a practical, simple technique, provides fast effects, right operating conditions and also produces adequate postoperative analgesia.

Post Dural Puncture Headache (PDPH) is an iatrogenic complication of spinal anesthesia in the form of a headache which is usually characterized by pain in the frontal and occipital areas which are aggravated by a standing position and improved in a lying position [1]. A headache in PDPH as a form of postoperative pain can be assessed by the Visual Analogue Scale (VAS) [2]. PDPH signs appear as a result of cerebrospinal liquor (CSF) discharge through a gap formed during spinal needle puncture resulting in traction on intra-cranial components and reflex cerebral vasodilation [3]. Patients experiencing PDPH also may experience nausea, vomiting, visual impairment, tinnitus, or deafness.

Some literature states that PDPH not only causes a decrease in patient productivity but also has the potential to result in disability, psychological, economic and social disturbances so that PDPH is a source of morbidity for patients [4]. The World Health Organization (WHO) data shows that the results of research on obstetric anesthesia, PDPH was the third highest case after maternal death and infant head injury at 12%. Several factors that influence PDPH incidents include sex, needle size, and needle type [5].

Research Of using needle types against PDPH events was carried out at the Hospital in Bandung, showing that the incidence of PDPH in spinal anesthesia using the number 27 Point needle was lower (31.8%) than the rate of PDPH in spinal anesthesia using the number 25 Quincke needle (68.2%). Nowadays, there are still a few studies that have examined various types of non-invasive therapies to treat PDPH. Some conservative (non-invasive) treatments that have been studied include early mobilization and 24-hour bed rest which can reduce patient comfort because the patient is in a headache and postoperative condition, where the patient is at risk of falling, feeling discomfort due to acute pain associated with surgical trauma, anxiety. Through this study, the researcher wanted to analyze further the use of Pencil Point number 27 with green tea 2 hours post operation in the prevention of PDPH in patients post-cesarean section surgery with spinal anesthesia.

2. Methods
This research is a real experimental Post Test Control Group Design to compare the incidence of PDPH in cesarean section surgery with regional anesthesia using pencil number 27 plus the provision of green tea 2 hours post-surgery. The target population in this study were all women with the cesarean section under regional anesthesia (spinal), while the affordable population in this study were mothers with the cesarean section under local anesthesia (spinal) at the Islamic Hospital of Sultan Aging Semarang who met the following criteria:

A. Inclusion Criteria

1. Maternity cesarean section
2. Regional anesthesia (spinal)
3. Age range 20 - 35 years
4. Patients belong to ASA 1 and 2 categories
5. BMI 19.8-26
6. Duration of operation 30 minutes - 2 hours

B. Exclusion Criteria

1. Mothers experience postoperative complications
2. Mother has experienced PDPH before

The sampling process is carried out by giving equal opportunities to each member of the population to become a member of the sample. The study was conducted on maternity cesarean section under regional anesthesia (spinal) at the Islamic Hospital Sultan Agung Semarang Education. Sample selection using lottery techniques. The results of the lottery out determine the patient to be a treatment group or to become a control group. The sample size is calculated using the calculation formula.

$$2 - 1r - 1 \geq 15 \, r \geq 16$$

The minimum sample size in each group was 16 mothers who delivered cesarean section under regional anesthesia (spinal). The Amount number of samples from the two group was 32 mothers who gave cesarean section under local anesthesia (spinal). Respondents after conducting informed consent will be divided into two groups, namely the intervention group and the control group using the lottery method.

3. Result and discussions

Post Dural Puncture Headache (PDPH) is an iatrogenic complication of spinal anesthesia techniques. The occurrence of a headache after dura function is more commonly found in pregnant women who performed regional spinal anesthesia; this condition can be seen from the research data with 32 pregnant women who delivered cesarean section using spinal regional anesthesia at Sultan Agung Islamic Hospital found 19 patients experienced headache events post dura function. This is caused by the reduced elasticity of the cranial structure which is a physiological aging process. [6] The frequency of occurrence of Post Dural Puncture Headache (PDPH) in the treatment and control groups and the comparison between the two groups in detail can be seen in the table below.

Table 1: Incident of PDPH

Group	Incident PDPH		Amount	p
	No	Yes		
Intervention (n=16)	11 (84, 6%)	5 (26, 3%)	16 (50%)	0,001*
Control (n=16)	2 (15, 4%)	14 (73, 7%)	16 (50%)	
Amount	13 (100%)	19 (100%)	32 (100%)	

*Chi-Square

Based on the able it is known that in the intervention group the number of respondents who were not PDPH was 84.6% while those who experienced PDPH were 26.3%. In the control group, the number of respondents who were not PDPH was 15.4% while those who suffered PDPH were 73.3%. Chi-square test results obtained a p-value of 0.001 (p <0.05) showed that the comparison of the frequency of PDPH events in the two groups showed a significant difference.

PDPH events were identified using Visual Analog Scale (VAS). The higher the VAS scale, the more severe the headache or disturbing. The results showed the VAS scale in the group of respondents given spinal anesthesia with pencil point number 27 and lower green tea 2 hours postoperative extract (n = 4.06) compared to the group of respondents given spinal anesthesia with needlepoint number 25 and extracted green tea 2 hours post-surgery (n = 15.6). The difference in assessment using the VAS scale of the two groups was significant (p = 0.002). The VAS score is measured for 3 (days), and the results of the calculation of the average can be seen from the figure below.

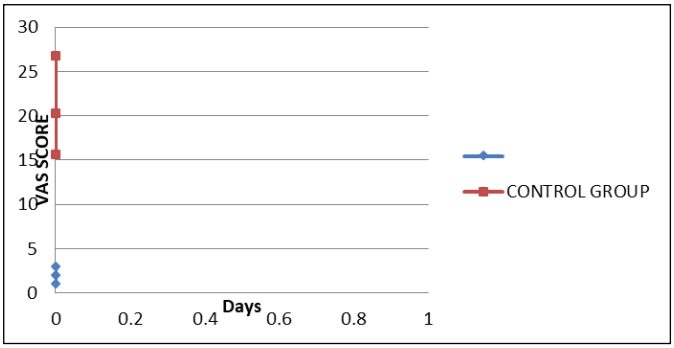

Fig 1: VAS Score

The average VAS score observed from 1-3 days obtained from the results of direct observation on respondents was carried out by bivariate tests to test the hypothesis. The Mann Whitney test was used because the VAS score data in the treatment group were not normally distributed (p <0.0001) while in the control group the distribution was normal (p = 0.56). The Mann Whitney test results are shown in the table below.

Table 2: The Mann Whitney test

Group	N	Mean ± SD	p
Treatment	16	4,06 ± 6,4	0,002
Control	16	15,6 ± 10,6*	

The table above shows the hypothesis test with Mann Whitney obtained a significance value of 0.002 (p <0.05) indicating that regional anesthesia in the cesarean section with pencil point needle number 27 and giving green tea 2 hours post-Surgery decreased the incidence of PDPH.

This study compares PDPH events prospectively with the posttest only control group design. The results showed no significant differences in characteristics (age, education, occupation) of the intervention and control groups, but there were substantial differences in the incidence of PDPH with Visual Analog Scale (VAS) scores in patients with regional anesthesia cesarean section with number pencil point needle 25 and 27, with PDPH incidence and VAS score lower in spinal anesthesia with needle number 27 than needle number 25. These results indicate that needle size is the only factor that influences the PDPH incidence in respondents. Patients aged 20-40 years are more at risk of suffering from

PDPH compared with patients aged> 50 years [7]. The study said that the occurrence of PDPH in subjects under and over 50 years stated that patients aged 31-50 years were at high risk of developing PDPH.23 The PDPH event was closely related to the size of the dura whole that occurred during the stabbing process [8]. Two factors are relevant to this problem, namely the size of the needle and the shape of the needle tip [9]. Spinal needle pencil type number 25 is a spinal needle with the format most often used in Sultan Agung Semarang Hospital rather than Pencil Point number 27 spinal needles. This condition is due to cheaper needle usage and needle price factors as well as availability for patients who enter the Health Social Security Assistance or in Indonesia is known as *Badan Penyelenggara Jaminan Sosial* (BPJS).

The most influential factor in PDPH incidence is the size and type of needle [10]. The larger the diameter of the needle and the more traumatic needle type, the higher the PDPH incidence. The needle with the Quincke tip can cut the dura fibers which causes a persistent dura mater tear, while the tip of the spinal non-cutting needle or like a pencil point needle (Whitacre, Sprotte) can cut the dura mater fiber that can return to its original location and reduce the loss of CSS after a dura minimize PDPH incidence [11]. This is supported by a statement from Pan *et al.* which suggested the use of pencil point needles because the resulting tears were not as severe as those torn by a traumatic needle.

4. Conclusions

Most Caesarean mothers who were respondents to this study were mostly aged 20-25 years. The level of education of research subjects is mainly at the level of junior high schools. The types of work subject to research are primarily private and entrepreneurial employees. The incidence of PDPH in post-cesarean section patients with spinal anesthesia in this study was 59.4%. The level of PDPH occurrence on the use of pencil point type number 27 and the provision of green tea 2 hours post cesarean section operation with spinal anesthesia was 31.3%. The level of PDPH occurrence on the use of pencil point needle number 25 and the provision of green tea 2 hours post cesarean section operation with spinal anesthesia was 87.5%. Regional anesthesia in the cesarean section with pencil point number 27 number and giving green tea 2 hours post-surgery effectively reduced the incidence of PDPH.

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