

Comparison of Side Effects of General Anesthesia and Spinal Anesthesia in Postoperative Patients

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Abstract

Introduction: Anesthesia is an action to relieve pain during surgery and various other procedures that cause pain in the body, there are several anesthesia actions including general and spinal anesthesia but the anesthesia action causes some side effects.

Objective: This study aims to determine the comparison of side effects of spinal anesthesia and general anesthesia in postoperative patients. **Method:** The research design used in this study is a comparative study with the type of descriptive research. **Population** The population in this study was patients under spinal anesthesia and general anesthesia. **Result and Discussion:** Based on the results of statistical analysis of the Chi-square test, it shows that there is a significant comparison in both types of anesthesia used for surgery, namely general narcosis anesthesia and spinal anesthesia on postoperative side effects with a value of (p -value = 0.026). **Conclusion:** The conclusion of two different types of anesthesia shows significant differences due to differences in the way of administration of anesthetic drugs and the doses given so that they get different side effects. Advice in using the type of anesthesia must be considered the type of surgery to be performed as little as possible must reduce the side effects obtained by the patient.

Keywords: Side effects; General Anesthesia; Spinal Anesthesia;

Introduction

Anesthesia and reanimation is a branch of medical science that studies the management of numbness (Fatimah et al., 2017). Pain, patient discomfort, and other unexpected feelings. Anesthesiology is a science that studies management to maintain or maintain the patient's life during "death" due to anesthesia drugs (Mangku, 2010) in (Kusumawati, 2019). Anesthesia means "loss of taste or sensation." A term used by neurologists with the intent to express that there is pathological loss of taste in a particular body part, or desired body part

The current technical use of the term "anesthesia" (meaning "surgical pain reduction"), is attributed to the use of the term by American physician Oliver Wendell Holmes (1809-1894), who used it for his discovery of Morton's "etherization" soon after his performance. The word "anesthesia" when used singularly today, means "general" anesthesia. Regional anesthesia is a method that is more analgesic. Regional anesthesia only relieves pain but the patient remains conscious. Therefore, this technique does not meet the triad of anesthesia because it only eliminates pain perception (Pramono, 2017) in (Andriyani, 2020)

All anesthetics have side effects received by patients, but these side effects have differences in accordance with anesthesia measures, but in this case the side effects received by patients are not clearly known

Method

The research design used in this study is a *comparative study* with the type of descriptive research. The study was conducted on postoperative patients using Spinal anesthesia and general narcosis at Hazardngkara TK II Sartika Asih Hospital Bandung. The sample technique in this study uses *the Non-probability Sampling* technique. The sample in this study amounted to 166 patients with criteria for inclusion of patients with spinal anesthesia and general anesthesia in 2021, as well as with the criteria of exclusion of patients with local anesthesia. Analyze data using *Chi-square*.

Results and Discussion

Result

The results of this study discuss the analysis of *univariate* data on the *percentage* of the incidence of Side Effects in patients operated on using Spinal Anesthesia and General Anesthesia in Postoperative Patients. Furthermore, in the analysis of *bivariate* data, researchers discussed the Side Effects of Spinal Anesthesia and General Anesthesia in Postoperative Patients.

1. Variable Frequency Distribution Anesthesia Type

Data analysis in this section describes the variable frequency distribution of the type of anesthesia used at the time of surgery, then look at the side effects of each type of surgery.

Comparison of Side Effects of General Anesthesia and Spinal Anesthesia in Postoperative Patients**Table 1**

Frequency Distribution of the Type of Anesthesia used during surgery against side effects felt by patients at post with N = 166.

Types of Anesthesia	Side effects		Total
	There are side effects	No side effects	
General Narcos	10	65	75
	13.3%	86.7%	100%
Spinal	25	66	91
	27.5%	72.5%	100%

Based on Table 1, a small percentage of the incidence of side effects in the general type of narcosis anesthetics was 10 respondents (13.3%). In contrast to patients with spinal anesthesia, it is known that almost half of the respondents had side effects, namely as many as 25 respondents (27.5%).

2. Comparison of Side Effects of Spinal Anesthesia and General Anesthesia in Postoperative Patients

Data analysis in this section will describe significantly the comparison of the variable types of anesthesia used at the time of surgery, then look at postoperative side effects in both types of anesthesia.

Table 2

Comparison of Side Effects of Spinal Anesthesia and General Anesthesia in Postoperative Patients with N = 166.

Types of Anesthesia	Side Effects				Total		p-Value
	Side effects are present		No side effects				
	F	%	F	%	F	%	
General Narcos	10	13.3	65	86.7	75	100	0,021
Spinal	25	27.5	66	72.5	91	100	
Total	35		131		166		

Table 2 based on the results of statistical analysis of the *Chi-square test*, shows that there is a significant comparison of the two types of anesthesia used for surgery, namely general narcosis anesthesia and spinal anesthesia on postoperative side effects with a value of ($p\text{-value} = 0.026$)

Discussion

1. Percentage Variable Frequency Distribution of Anesthesia Type

The percentage results on the variable frequency distribution of the type of anesthesia in this study showed that both types of anesthesia had side effects but the side effects received by patients were fewer in the general type of narcosis esthesia, which was only a small percentage of respondents had side effects. General anesthesia indicates that the patient has been made unconscious with drugs but can be resuscitated, in the performance of painful surgery (SHOLICHAH, 2018).

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"Inhalation", "intravenous", "intramuscular", and "per rectum" anesthesia are subdivisions of general anesthesia. Adjectives describe the pathway used by drugs to enter the body, so that through the bloodstream it can be passed on to the brain. General anesthesia of varying degrees provides analgesic, hypnotic-sedative effects, and also muscle relaxation.

Other properties caused by general anesthesia are more stable hemodynamics, less organ toxicity, general anesthesia is widely used by anesthesiologists because of the low solubility of blood-gas and also blood-tissue sunlit faster recovery (Putri et al., 2019)

2. Comparison of Side Effects of Spinal Anesthesia and General Anesthesia in Postoperative Patients

The results of statistical analysis using *Chi-square*, showed that there was a significant comparison between the two types of anesthesia used for wound irrigation during surgery, namely general narcosis and spinal with the incidence of postoperative side effects with a value ($p\text{-value} = 0.026$). This shows that there are differences in the characteristics of the two types of anesthesia.

Characteristics of spinal anesthesia, according to Morgan 2013, the mechanism of action of spinal anesthesia is: The spine consists of vertebral bones and fibrocartilaginous intervertebral disks (FATIKHA, n.d.) . It consists of 7 cervical, 12 thoracic, and 5 lumbar vertebrae. The sacrum is a fusion of 5 sacral vertebrae, and there is a small rudimentary base of the coccygeal segment (DEWI, n.d.) .

The spine as provides structural support for the body and protection for the spinal cord and nerves, and allows a degree of spatial mobility in some areas. The main location of the neuraxial blockade action is the nerve root. The spinal needle penetrates the skin, subcutaneously, penetrates the supraspinous ligament that extends from cervical vertebra 7 to the sacrum, the interspinous ligament that connects the two spinous, the flavum ligament (yellow elastic fiber), to the epidural space, durometer, subarachnoid space. Local anesthesia is injected in LCS (liquid cerebra spinal) (ADININGRUM, n.d.)

Direct injection of local anesthesia into the LCS, provides relatively small quantities and volumes of local anesthesia to achieve high levels of sensory and motor blockade. Blockade of neural transmission of posterior nerve root fibers hinders somatic sensation, somatic blockade by inhibiting impulse transmission of pain and eliminates skeletal muscle tone (skeet). Sensory blocks inhibit somatic or visceral pain stimuli while motor blocks cause muscle relaxation.

Spinal anesthesia has complications, namely: 1) Sympathetic nerve blockade (hypotension, bradycardia, nausea, vomiting), 2) High spinal block or total spinal block, 3) Hypoventilation, 4) Back pain, 5) Hematoma at the injection site, 6) *Post Dural puncture headache* (PDPH), 7) Meningitis, 8) Epidural abscess, 9) Hearing loss, 10) Nervous disorders, 11) Urinary retention (Pramono, 2017).

Unlike the characteristics found in general anesthesia, general anesthesia or *general anesthesia* has the aim of relieving pain, making unconscious, and causing amnesia that

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is *reversible* and predictable. General anesthesia is also referred to as *narcosis* or anesthesia.

General anesthesia also causes anterograde amnesia, which is memory loss during anesthesia and surgery so that when the patient is conscious, the patient does not remember the surgical/anesthetic event that has just been performed (AZZAHIDAH, 2019)

According to Mangku and Senapathi (2010), three components of anesthesia are popularly called the anesthesia triad, namely hypnotics (patients lose consciousness), analgesics (pain-free patients), and relaxation (patients experience skeletal muscle relaxation) (Febrienka, 2018). The three components can be realized by a combination of several drugs to achieve each component of the anesthetic triad.

The recovery time of each patient can vary, the delayed conscious recovery process is one of the unexpected events in anesthesia (Risdayati et al., 2021). The causes are various factors, can be caused by patient factors, problems in surgery and anesthesia and drug factors. Anesthesia-related causative factors can be due to pharmacological factors or non-pharmacological factors.

Drug factors such as the use of various anesthetic drugs with adjuvant drugs that are mutually synergistic and interacting. Non-pharmacological factors include hypothermia, hypotension, hypoxia, and hypercapnia. Related to pharmacokinetic factors, pharmacodynamics, *context sensitive half-lives*, number of drugs administered and drug interactions.

Patient factors such as old age, gender, obesity, genetic factors and comorbidities (dysfunction of the heart, kidneys and liver) that can increase the potential of anesthetic drugs given (Prabowo et al., 2022)

Causative factors related to surgery are the length of surgery and anesthesia techniques performed (Permatasari et al., 2017). The duration of anesthesia also affects the length of recovery of consciousness, there is a relationship between the length of anesthesia action with the recovery time of conscious patients after general anesthesia (Aribowo, 2012). The results of this study were respondents with a duration of anesthesia < 60 minutes, all of them had 100% of the recovery time of consciousness quickly and respondents with a duration of anesthesia of > 60 minutes, 40.5% had a fast recovery time of consciousness and the remaining 59.5% of the recovery time of consciousness was long.

This type of inhaled anesthetic medication can also affect recovering consciously and having a different recovery time. Based on research (Aryena, 2015) found as many as 11 out of 15 patients using sevofluran experienced full conscious recovery and 4 out of 15 patients using isoflurane experienced full conscious recovery.

Conclusion

This study shows that there is a statistical difference between the two types of anesthesia, namely general and spinal anesthesia, on the side effects received by postoperative patients.

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However, both types of anesthesia are very used for anesthesia of patients depending on the operation to be performed with different characteristics and compositions that have an impact on postoperative side effects, besides that both types of anesthesia only show a small percentage who experience side effects.

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