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MULTIPLE CASE STUDY:COGNITIVE STATUS IN PRE-ELDERLY PATIENTS UNDERGOING TRANSURETHRAL RESECTION OF PROSTATE (TURP) PROCEDURE WITH SPINAL ANESTHESIA

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ABSTRACT
Benign Prostatic Hyperplasia (BPH) in pre-elderly often causes problems such as discomfort when urinating. The action that can be taken is to perform Transurethral Resection of Prostate (TURP) surgery with Spinal Anesthesia technique. The risks that can occur are Postoperative Cognitive Dysfunction (POCD), such as decreased cognitive function, memory impairment and decreased attention that can occur within a certain period of time. Objective: To determine the cognitive status in pre-elderly patients who underwent TURP procedure with spinal anesthesia. The design of this study was a Multiple Case Study with a qualitative descriptive approach of 5 pre-elderly patient participants who underwent spinal anesthesia. The data collection tools used in this study are interview sheets and MMSE (Mini-Mental State Examination) observation sheets which are used to enter patient observation. Results of the five participants, only two experienced moderate cognitive status disorders and three participants did not experience post-operative cognitive status disorders. Age is a factor in the occurrence of post-operative cognitive status disorders. Two of the five participants in this study experienced moderate cognitive status disorders.

Keywords: cognitive status; pre-elderly patients; spinal anesthesia; transurethral resection of prostate (TURP) procedure

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INTRODUCTION

Benign Prostatic Hyperplasia(BPH) is a disease that very often causes problems in men. In addition to increasing morbidity, it can also disrupt the quality of life of men.(Kemalasari et al., 2015). WHO 2018 obtained data on BPH sufferers >30 million cases. While in Indonesia in 2017 there were >6 million cases of BPH. In BPH sufferers who experience discomfort when urinating and feel like something is blocking the urine outlet, the action that can be taken is to perform Transurethral Resection of Prostate (TURP) surgery.(Bufa, 2006 in Samidah & Romadhon, 2015).

TURP is a therapy with a minimum intervention operative method that is widely used (gold standard) to treat prostate enlargement and most hospitals perform TURP on patients suspected of having BPH.(Satriawan et al., 2021). TURP procedures are usually performed using Spinal Anesthesia techniques.(Bhattacharyya et al., 2015). Spinal anesthesia is a procedure for administering anesthetic drugs to relieve pain in patients who will undergo abdominal and lower extremity surgery by injecting local anesthetic drugs into the cerebrospinal fluid in the subarachnoid space.(Chusnah etet al., 2021).There are several risks that occur due to administering spinal anesthesia.

One of the risks that can occur after spinal anesthesia is Postoperative Cognitive Dysfunction (POCD).(Ehsani et al., 2020). POCD is a decline in a person's cognitive abilities after surgery, POCD can occur in 15-25% of patients who undergo surgery.(Baskoro et al., 2022). In another study, the incidence of POCD was found to be 21.2% after general anesthesia and 12.7% in regional anesthesia. Advanced age is a factor that plays a major role in the incidence of POCD with an incidence of 41.4% in those over 60 years of age(Sahana et al., 2020).

Pre-elderly patients are at greater risk for POCD due to the physical and physiological changes associated with aging. Studies have shown that POCD can lead to increased risk of long-term disability, decreased social functioning, and increased mortality in certain populations.(Monk et al., 2008). POCD in the elderly can occur due to decreased cognitive function, memory disorders, attention, executive functions that can occur over a certain period of time.(Nurcahyo et al., 2021). Research on the incidence of POCD in pre-elderly patients has been conducted but only general anesthesia and epidural anesthesia are described, while the incidence of POCD in pre-elderly patients undergoing TURP with spinal anesthesia is not described. Based on this description, the researcher wants to conduct a case study of the incidence of POCD in pre-elderly patients undergoing TURP with spinal anesthesia.

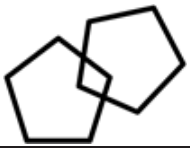
METHOD

The research design used in this study is a multiple case study with a qualitative descriptive approach. This study is also a field research, which is carried out by going directly to the field to obtain data. The variables to be studied in this study are the incidence of POCD in pre-elderly patients undergoing TURP procedures with spinal anesthesia. This study was conducted in the Central Surgical Installation (IBS) room of the Mangusada Regional Hospital. Data collection began from May to June 2024.

This study will describe in depth the incidence of POCD in pre-elderly patients who underwent TURP with spinal anesthesia. The number of participants who will be involved in this study is five people. The data collection tools used in this study are interview sheets and MMSE (Mini-Mental State Examination) observation sheets (Table 1) which are used to enter patient observation results. The researcher obtained an ethical eligibility letter from the ITEKES BALI ethics commission, No: 04.0233 / KAPITEKES-BALI / V / 2024 and obtained research permits and ethical eligibility statements from the Director and Ethics Committee of RSD Mangusada, No: 070/4900 RSDM / 2024. Data analysis in this study was carried out in depth on Cognitive Status in pre-elderly patients who underwent TURP procedures with spinal anesthesia, namely single case analysis and cross case analysis.

Table 1.
POCD MMSE (Mini-Mental State Examination) Assessment

Item	Test	Max value	Mark
	ORIENTATION		
1	What day is it (year), (season), (month), (date)?		
2	Where are we? (country), (province), (city), (hospital), (floor/room)		
	REGISTRATION		
3	Mention 3 names of objects (orange, money, rose), each object 1 second, the patient is asked to repeat the three names of the objects. Score 1 for each correct name of the object. Repeat until the patient can name it correctly and record the number of repetitions.		
	ATTENTION AND CALCULATION		
4	Subtract 7 from 100. 1 point for each correct answer. Stop after 5 answers. Or be asked to spell the word “WAHYU” backwards (points are given to the correct letter before the error; for example		

Item	Test	Max value	Mark
	uyahw=2 points)		
	RECALL		
5	The patient is asked to repeat the 3 names of the objects above.		
	LANGUAGE		
6	The patient is asked to name the object shown (pencil, watch)		
7	The patient is asked to repeat a series of words: "without ifs and or buts"		
8	Patientasked to carry out the command: "Take this paper with your right hand, fold it in half and put it on the floor."		
9	The patient is asked to read and carry out the command “Raise your left hand”		
10	The patient is asked to write a sentence (spontaneously)		
	Patients are asked to imitate the image below. 		
	Total Score		

RESULT

General Characteristics of Participants

This study was conducted on pre-elderly patients who experienced Benign Prostatic Hyperplasia (BPH) and underwent TUR-P with spinal anesthesia.

Table 2.
Participant Characteristics

Participants	Bmi	Age (Year)	Work	Drug Dosage Ondansetron	Midazolam	Bupivacaine
1	23.5	55	Businessman	4 mg	1 mg	12.5 mg
2	21.9	48	Self-employed	4 mg	1 mg	12.5 mg
3	30.5	56	Farmer	4 mg	1 mg	12.5 mg
4	23.4	50	civil servant	4 mg	1 mg	12.5 mg
5	26.6	55	Farmer	4 mg	1 mg	12.5 mg

Participants in this study were 5 people, with an age range of 44-56 years, namely the adult or pre-elderly age group. Four participants in this study had a BMI in the normal range, and one of them had a BMI that was included in the obesity category. All participants in this study received the same dose of drugs, namely Ondansetron 4 mg (IV bolus), Midazolam 1 mg (IV bolus), Bupivacaine 12.5 mg at L3-L4 and prophylactic antibiotic Ceftriaxone 2 g each (drip).

Table 3.
Cognitive Status of All Participants

Participants	Orientation	Registration	Attention And Calculation	Recall	Language	Cognitive Status
1.	9	3	5	3	7	27
2.	10	3	2	3	10	28
3.	10	3	3	0	7	23
4.	10	3	5	3	8	29
5.	6	3	3	2	7	21

Based on the results of the MMSE sheet observation on participant 1 patient Mr. R who is 55 years old, with ASA I physical status, works as a businessman, has no history of drug/food allergies and has no history of other systemic diseases. The researcher obtained a score assessment result of 27 which means that there was no post-operative cognitive status disorder. When compared with the results of the assessment observation on participant 3 patient Mr. B who is 56 years old, ASA II physical status with a history of smoking and drinking habits, the patient also has a comorbid obesity disease. The researcher obtained a post-operative cognitive status score assessment result of 23 which means that the patient is included in the category of mild cognitive status disorder.

Based on participant 2, patient Mr. S, aged 48 years who works as a private employee, has no history of drug/food allergies and no history of systemic diseases. The results obtained are not much different from the score results in participant 1, which is 28, which means there is no cognitive status disorder after surgery. When compared with the results of observations in participant 5, patient Mr. K who is 55 years old, ASA physical status I, has no history of drug/food allergies and no history of other comorbidities, the patient works as a farmer. From the results of the post-operative assessment, the researcher got a score of 21, this result is much different from the results obtained by the researcher in participant 2.

DISCUSSION

Identifying General Characteristics of Participants

Based on the observation results, when viewed from the age of all participants from the first to the fifth, they were male and aged between 46-56 years. Age is one of the risk factors for post-operative cognitive status disorders in elderly patients undergoing spinal anesthesia. This is in accordance with previous studies that show that the older the age, the higher the risk of post-operative cognitive status disorders.(Nurcahyo et al., 2021). Cognitive dysfunction when associated with gender, based on research by E Van Exel, it was concluded that cognitive function in women is better than in men because there are risk factors such as cardiovascular disease which are often found in men.(Ramli & Masyita Nurul Fadhillah, 2022).

Knowing the Cognitive Status of Participants

Based on the results of the cognitive status assessment using the MMSE observation sheet, the five participants showed results that were not too different, of the five participants only two experienced mild cognitive status disorders and three participants did not experience post-operative cognitive status disorders. Specifically in the 3rd case in this study, Patient (Mr. B) aged 56 years, ASA physical status II, weight 80 kg and height 162 cm, Hindu religion, working as a farmer based on the results of the MMSE test assessment, the researcher after surgery got a score of 23 which means that the participant is included in the category of mild cognitive status disorders. This happened because the participant had a history of comorbidities, namely obesity.

The results of this study are in accordance with research that has been conducted by(Sahana et al., 2020)entitled "Comparison of Postoperative Cognitive Dysfunction (POCD) in the acute phase after Joint Arthroplasty in Elderly Patients Between General Anesthesia and Epidural Anesthesia", age and education factors play an important role in the formation of a person's cognitive reserve. A person with high cognitive reserve can adjust to brain damage without causing cognitive impairment. Obesity increases the incidence of cognitive impairment through changes in the inflammatory and immune responses to surgical stress. Obese patients tend to have an excessive inflammatory response that has the potential to cause neuronal damage to the central nervous system and cause cognitive status disorders.

Based on the results of the researcher's observations, of the five participants, three participants did not experience post-operative cognitive status disorders. Specifically in case 1, Patient (Mr. R) aged 55 years, ASA physical status I, weight 68 kg and height 170 cm, Hindu religion, working as a businessman, the patient's history of consuming alcohol on a daily basis, the researcher got the results of the MMSE observation score assessment of 27 which means that he did not have post-operative cognitive status disorders. This is contrary to the theory put forward by(Dewi Maharani et al., 2021)that excessive alcohol consumption has a strong relationship with the occurrence of delirium, long-term cognitive impairment, dementia due to brain atrophy and vitamin B12 deficiency.

POCD or postoperative cognitive status disorder is defined as a disorder of higher brain function in the form of impaired orientation, attention, concentration, memory and language and intellectual function for weeks to months after anesthesia and surgery. Cognitive status disorder is a condition in which patients experience memory dysfunction, abstract thinking, and impaired orientation after a surgical procedure. Many factors can influence the incidence of post-operative cognitive status disorders related to age, including hormonal influences, especially a significant decrease in estrogen levels, accumulation of free radicals in body organs that occurs in old age, microvascular disorders, chronic inflammatory reactions, insulin resistance disorders, malnutrition, and many other factors related to increasing age.(Nurcahyo et al., 2021). Based on the risk factor of age, this study shows that participants aged over 55 years have a higher prevalence of probable cognitive impairment compared to those under 55 years of age. This is indicated by the assessment of the MMSE score results in participant 2 aged 48 years getting a score of 28, while when compared with the assessment score results of participant 3 aged 56 years it is different, the results obtained are 23.

CONCLUSION

The general characteristics of patients in this study were male, aged 46 – 56 years. Two of the five participants in this study had moderate cognitive impairment. Age is one of the factors that causes post-operative cognitive impairment status.

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