



ELSEVIER

Original contribution

# Length of postanesthetic care unit stay in elderly patients after general anesthesia: a randomized controlled trial comparing desflurane and sevoflurane<sup>☆, ☆ ☆</sup>

Jatuporn Pakpirom MD, FRCAT\*, Jitsinee Kraithep MD (Anesthesia resident),  
Ngamjit Pattaravit MD, FRCAT (Assistant professor)

*Department of Anesthesiology, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand*

Received 22 April 2015; accepted 25 August 2015

## Keywords:

Desflurane;  
Elderly;  
PACU stay;  
Sevoflurane

## Abstract

**Objective:** The purpose of this study was to compare the length of postanesthetic care unit (PACU) stay and recovery profiles of elderly patients after general anesthesia between sevoflurane and desflurane.

**Design:** Randomized, double-blind, controlled clinical trial.

**Setting:** Tertiary care hospital, university hospital.

**Patients:** Eighty elderly patients undergoing nonemergency surgery under general anesthesia.

**Intervention:** Patients were randomly allocated into 2 groups: sevoflurane group (n = 38) and desflurane group (n = 42) in a double-blind manner. All of the patients underwent general anesthesia with oral endotracheal intubation using the same induction, muscle relaxants, and narcotics medication. When the operation was finished, the volatile agent was discontinued and muscle relaxation was reversed.

**Measurement:** The length of PACU stay was recorded as the primary outcome. The recovery profiles (time to open eyes, time to follow to commands, and time to extubation) were assessed.

**Main results:** There was no significance between the groups in age, sex, body mass index, American Society of Anesthesiologists physical status, type of surgery, duration of anesthesia, perioperative use of fentanyl, or blood loss. The length of PACU stay was not significantly different in the patients who recovered from sevoflurane (49.4 ± 23.1 minutes) or desflurane (50.1 ± 25.8 minutes) general anesthesia. Desflurane was significantly associated with faster early recovery than sevoflurane measured by time to open eyes (7.5 ± 3.4 vs 9.6 ± 4.6 minutes) and time to follow commands (9.0 ± 3.3 vs 11.2 ± 5.1 minutes), respectively.

**Conclusion:** Desflurane was more associated with a faster early recovery (time to open the eyes and follow commands) than sevoflurane in elderly patients after general anesthesia. However, the length of PACU stay was similar in both groups.

© 2015 Elsevier Inc. All rights reserved.

<sup>☆</sup> Supported by a grant from the Faculty of Medicine, Prince of Songkla University.

<sup>☆☆</sup> Institutional review board approval: Prince of Songkla University review board, no. 53-262-08-4-2.

\* Corresponding author at: Anesthesiology Department, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand 90110. Tel.: +66 74451651, +66 887825728.

E-mail address: pakpirom013@gmail.com (J. Pakpirom).

## 1. Introduction

Aging is an irreversible and progressive physiological phenomenon characterized by degenerative changes in the structure and functional reserves of organs and tissues. In advancing age, patients have a greater alteration in physiology, pharmacokinetics, and dynamics than the younger age group. These changes usually increase the morbidity and mortality of the elderly patients and have an effect on recovery from general anesthesia [1].

Elderly patients' recovery from general anesthesia and surgery is affected by postoperative cognitive dysfunction which usually results in increasing morbidity, delayed recovery, and increased hospital stay [2]. A previous study reported that 53% of the patients under investigation experienced problems in the memory domain, such as the capacity of learning and remembering, whereas 34% had difficulty with the executive function domain, such as the ability to efficiently process information, concentrate, and self-monitor, and 13% experienced a combination of both [3]. Moreover, some studies showed that the elderly have high rates of cognitive impairment perioperatively [4,5]. Thus, rapid recovery from anesthesia may be an advantage to the elderly who have a high risk of cognitive impairment.

Using volatile anesthetics which have rapid washout and low metabolites in the body can promote rapid recovery from general anesthesia and may decrease the incidence of postoperative delirium and cognitive dysfunction in elderly surgical patients [6]. Volatile anesthetic agents with low blood-gas coefficients result in rapid recovery during the emergence period compared with inhaled anesthetics with high blood-gas coefficients. Thus, using rapid elimination anesthetic agents may contribute to less postoperative cognitive dysfunction and delirium in elderly surgical patients [7,8]. It has been reported that postoperative recovery from desflurane general anesthesia was associated with a faster emergence than that from sevoflurane and resulted in less time spent in the postanesthetic care unit (PACU) by elderly patients undergoing total knee or hip replacement [6].

The service fees of PACU, which is the standard care of postsurgical patients, are double the ward fees [2]. Decreasing the length of a PACU stay normally reduces the service fees, which has a significant economical impact [9]. The length of PACU stay was correlated with patient age; pain medication; length of surgery; and postoperative cardiovascular, pulmonary, and pain response [10] and was significantly longer for patients with a delayed awakening from anesthesia [3]. If the elderly patients rapidly recover from anesthesia, both the length of PACU stay and staffing cost can be decreased. Therefore, the objective of this research was to find out whether desflurane could shorten the elderly patients' length of stay in the PACU.

## 2. Materials and methods

Data were collected from Songklanagarind Hospital, a university hospital, between December 2010 and February 2012. After obtaining approval from the Ethics Committee, 80 American Society of Anesthesiologists physical status II to III patients older than 65 years undergoing general anesthesia were enrolled in the study. Patients who had clinically significant cardiovascular, respiratory, hepatic, renal, neurological, and/or psychiatric (such as dementia or Alzheimer disease) and metabolic disease or who were morbidly obese were excluded from this study. Those who had undergone general anesthesia within the previous 1 week and those who were planned to remain intubated were also excluded. Patients were informed and consented to the study. Patients were randomly assigned to 1 of 2 groups using a computer-generated random number table.

Patients were blinded to the anesthetic agent; however, anesthesiologists and nurses' anesthetists were not because they needed to adjust the dial setting of the volatile agent to maintain an appropriate depth of anesthesia with the Bispectral (BIS) index. The researchers who assessed outcomes (early recovery profile and PACU discharge) were blinded.

During the preoperative period, the patients did not receive any premedication sedative drug. On arrival in the operating room, routine monitoring devices were set, including BIS index monitor. Crystalloid 5 mL/kg was used for preloading within 5 to 10 minutes before anesthesia induction with 1 to 2  $\mu\text{g}/\text{kg}$  of intravenous (IV) fentanyl and 1.0 to 2.5 mg/kg of IV propofol. Endotracheal intubation was facilitated with 0.2 mg/kg of cisatracurium. General anesthesia was maintained with end-tidal sevoflurane 1.0% to 2.0% or end-tidal desflurane 2.0% to 5.0% in combination with air composed of 40% oxygen. Supplemental doses of 0.5  $\mu\text{g}/\text{kg}$  of IV fentanyl and/or cisatracurium were administered during the maintenance period. The BIS index was maintained between 40 and 60, and ventilation was controlled to maintain normocarbida in total flow of 1.5 L/min.

At the end of surgery, the residual neuromuscular blockade was reversed using 0.02 mg/kg of IV atropine and 0.05 mg/kg of IV neostigmine. The anesthetic agent was discontinued at the end of skin closure. Patients were ventilated with 100% oxygen at a fresh gas flow rate of 6 L/min. Nurses who had been assigned then were called to assess and record the following variables in a blinded manner: the time from discontinuation of anesthetic agent to eye opening, reaction to commands, tracheal extubation, duration of anesthesia and surgery, amount of intraoperative fentanyl consumption, volume of blood loss, and occurrence of intraoperative complications.

Patients were then transferred to the PACU after extubation and were evaluated every 5 minutes by blinded investigators based on the discharge criteria and pain scores

Download English Version:

<https://daneshyari.com/en/article/5884893>

Download Persian Version:

<https://daneshyari.com/article/5884893>

[Daneshyari.com](https://daneshyari.com)