

ORIGINAL RESEARCH

Assessment of prevalence of hypotension among hypertensive patients after induction of general anesthesia: An observational study

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ABSTRACT:

Background: During anaesthesia, maintenance of adequate tissue perfusion is mandatory. Intraoperative hypotension (IOH) is a common and frequent side effect of anaesthesia. Hence; the present study was undertaken for assessing the prevalence of hypotension among hypertensive patients after induction of general anesthesia. **Materials & methods:** Sample size for the present study included 200 hypertensive patients who underwent surgical procedures under general anesthesia. Complete demographic and clinical details of all the subjects were obtained from the record files. Complete analysis of the medical charts was done of all the patients from the anesthesia record files. The time period in each patient was divided into two parts; Interval T1: Time period starting from entering the room and extending till the point of tracheal intubation, Interval T2: Time period starting from point of intubation till the start of the surgical procedure. Assessment of prevalence of hypotension was done in separate Microsoft excel sheets. **Results:** Overall prevalence of hypotension at T1 was found to be 72.5 percent. Overall prevalence of hypotension at T2 was found to be 95 percent. Significant results were obtained while assessing the age wise distribution of patients with presence of hypotension after administration of general anesthesia. **Conclusion:** Hypertensive patients are often affected with hypotension during general anesthesia; with age being a significant risk factor for the same.

Key words: Hypotension, Hypertension, Prevalence

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INTRODUCTION

During anaesthesia, maintenance of adequate tissue perfusion is mandatory. Unfortunately, tissue perfusion cannot be assessed easily. Cardiac output measurement and pulmonary artery occlusion pressure are useful guides to anesthesia, but in current practice, blood pressure and heart rate are used as the main hemodynamic targets.¹⁻³ Perioperative blood pressure management is a key factor for anesthetists, as its instability is associated with adverse events. Intraoperative hypotension (IOH) is a common and frequent side effect of anesthesia.⁴ Previously, IOH was reported to be independently associated with adverse perioperative outcomes in several clinical settings, and even an association between IOH and long-term (1-year) mortality was reported.²⁻⁴ These findings have important clinical and medicolegal consequences. Perioperative stroke, for example, has often been attributed to IOH.^{5,6}

Hence; the present study was undertaken for assessing the prevalence of hypotension among hypertensive patients after induction of general anesthesia.

MATERIALS & METHODS

The present study was conducted with the aim of assessing the prevalence of hypotension among hypertensive patients after induction of general anesthesia. Sample size for the present study included 200 hypertensive patients who underwent surgical procedures under general anesthesia. Complete demographic and clinical details of all the subjects were obtained from the record files. Complete analysis of the medical charts was done of all the patients from the anesthesia record files. The time period in each patient was divided into two parts;

- Interval T1: Time period starting from entering the room and extending till the point of tracheal intubation,

- Interval T2: Time period starting from point of intubation till the start of the surgical procedure.

Defining hypotension⁶: Fall in blood pressure to the value of equal to or more than 25 percent of the initial blood pressure (Blood pressure at the time of entering the operation theater). Assessment of prevalence of hypotension was done in separate Microsoft excel sheets. All the results were analyzed by SPSS software. Chi-square test was used for assessment of level of significance.

RESULTS

In the present study, a total of 200 hypertensive patients who underwent surgical procedures under general anesthesia were included in the present study. Mean age of the patients of the present study was 57.8 years. 50 percent of the patients (100 patients) belonged to the age group of more than 50years. In the present study, overall prevalence of hypotension at T1 was found to be 72.5 percent. Overall prevalence of hypotension at T2 was found to be 95 percent. In the present study, significant results were obtained while assessing the age wise distribution of patients with presence of hypotension after administration of general anesthesia.

Table 1: Prevalence of hypotension at different time intervals

Time interval	Number of patients with hypotension	Percentage of patients with hypotension
T1	145	72.5%
T2	190	95%

Table 2: Age-wise and gender distribution of patients with hypotension at T1

Parameter		Number of patients with hypotension	p-value
Age group (years)	Less than 30	20	0.02 (Significant)
	30 to 50	50	
	More than 50	75	
Gender	Males	75	0.45
	Females	70	

Table 2: Age-wise and gender distribution of patients with hypotension at T2

Parameter		Number of patients with hypotension	p-value
Age group (years)	Less than 30	40	0.04 (Significant)
	30 to 50	60	
	More than 50	90	
Gender	Males	94	0.82
	Females	96	

DISCUSSION

Hypotension is commonly associated with abnormalities of other vital signs, in particular heart rate and rhythm.

Similarly, abnormalities of oxygenation and gas exchange may be present as evidenced by desaturation on pulse oximetry and problems with ventilation. It is important to determine which abnormality represents the primary problem as this will influence the differential diagnosis and management. This issue is worthy of consideration as it presents implications for workload and time management. In many cases hypotension should be adequately managed by recognition of simple patterns and, in such circumstances, a comprehensive elimination of all possible causes in every episode would result in unnecessary treatment and invasive procedures.⁷⁻⁹

In the present study, a total of 200 hypertensive patients who underwent surgical procedures under general anesthesia were included in the present study. Mean age of the patients of the present study was 57.8 years. 50 percent of the patients (100 patients) belonged to the age group of more than 50years. Bijker JB et al described the relation between the chosen definition and incidence of IOH. First, a systematic literature search was performed to identify recent definitions of IOH that have been used in the anesthesia literature. Subsequently, these definitions were applied to a cohort of 15,509 consecutive adult patients undergoing noncardiac surgery during general anesthesia. When applied to a cohort of patients, these different definitions resulted in different IOH incidences. Any episode of systolic blood pressure below 80 mmHg was found in 41% of the patients, whereas 93% of the patients had at least one episode of systolic blood pressure more than 20% below baseline. Both definitions are frequently used in the literature. The relation between threshold values from the literature and IOH incidence shows an S-shaped cumulative incidence curve, with occurrence frequencies of IOH varying from 5% to 99%. There is no widely accepted definition of IOH. With varying definitions, many different incidences can be reproduced.⁶

The influence of hemodynamic aberrations during anesthesia on adverse outcomes is an important clinical issue. There is evidence that hypotension and hypertension during general anesthesia are independently associated with adverse outcomes in patients having both noncardiac and cardiac surgery.⁶

In the present study, overall prevalence of hypotension at T1 was found to be 72.5 percent. Overall prevalence of hypotension at T2 was found to be 95 percent. One of the intervals of general anesthesia during which hypotension is prevalent is the period after the induction of anesthesia but before the onset of surgical stimulation. This period is particularly prone to decreased vigilance with regard to hemodynamic changes and inaccuracies in handwritten anesthesia records, probably because of increased workload for anesthesia practitioners. The advent of computerized anesthesia information management systems, with unbiased and automated data collection process, has enabled the accurate measurement of hemodynamic trends during anesthesia.^{10,11}

In the present study, significant results were obtained while assessing the age wise distribution of patients with presence of hypotension after administration of general

anesthesia. To limit the hypotension induced by intravenous drugs, anesthesia may be titrated to clinical response, especially in the elderly or in septic patients. In patients with severe sepsis, the choice of the induction agent is less important than the care with which they are administered. To guide induction anesthesia, bispectral index (BIS) monitoring may be helpful. BIS monitoring identifies the depth of anesthesia. Deep hypnosis (BIS <45) has been associated with postoperative complications and mortality. Controlling the depth of anesthesia limits the hypotensive effect of anesthetic drugs.^{11, 12}

CONCLUSION

From the above obtained results, the authors concluded that hypertensive patients are often affected with hypotension during general anesthesia; with age being a significant risk factor for the same.

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