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A COMPARISON BETWEEN MIDAZOLAM CO-INDUCTION AND PROPOFOL DOSE REDUCTION FOR THE INDUCTION OF GENERAL ANAESTHESIA:A RANDOMISED DOUBLE BLINDED TRIAL

Anaesthesiology

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ABSTRACT

Background: Co-induction is the administration of a small dose of a sedative or anaesthetic agent prior to induction of anaesthesia, the aim being to reduce the dose of induction agent required. Midazolam is a commonly used co-induction agent [1] that has been shown to act synergistically with propofol, reducing the induction dose of propofol by up to 52% In a prospective, double-blind, randomised, we have compared the effects of midazolam co-induction with propofol predosing on the induction dose requirements of propofol in elderly patients **Methods** : We enrolled 60 patients, attending for urological surgery. . Group m received midazolam 0.5mg/kg and propofol 2mg/kg; group p received 2mg/kg propofol. The propofol dose requirements for induction were recorded for two end-points (loss of verbal contact and insertion of an oropharyngeal airway). Cardiovascular parameters were recorded at 1-min intervals for each patient until induction was complete. **Result:** The midazolam M group showed a significant reduction in propofol dose requirements for induction ($p = 0.05$) compared to the P group. The propofol group did not show a significant dose reduction compared to the M GROUP There were no demonstrable differences in terms of improved cardiovascular stability between groups. **Conclusion:** Midazolam co-induction prevented a marked decline in SAP/MAP/DAP immediately after induction of GA, led to reduced postoperative anxiety and cortisol response to surgery, and reduced propofol requirements for induction

KEYWORDS

Midazolam,propofol, General Anaesthesia,co-induction

INTRODUCTION

The term co-induction of anesthesia has been used to describe the practice of administering a small dose of a sedative or other anesthetic agent to reduce the required dose of the induction agent[2]. Midazolam, when used as co-induction agent for general anesthesia (GA), has been shown to reduce the dose of propofol required for induction by up to 50% without affecting the recovery profile[3]. We hypothesized that midazolam co-induction would decrease the propofol dose required to induce GA, leading to less arterial pressure decline in the early stage of GA prior to surgical incision, and lower glycemia and cortisol levels. The secondary objective was to assess the effects of midazolam co-induction on PONV and postoperative anxiety[4,5].

Reports have further suggested it has effects on the incidence of postoperative nausea and vomiting (PONV)[6].

MATERIAL METHODS

Following ethics committee approval, and written informed consent, we studied 60 adult patients scheduled to undergo elective urological surgery under general anaesthesia .Written informed consent was obtained from all the patients.

Inclusion Criteria

Inclusion criteria for this study were male or female patients aged >60years with ASA scores between 1 and 3

Exclusion Criteria

Patients were excluded from the study if the standard anaesthetic technique was not considered appropriate, or if they were concurrently taking sedative medication. It was a prerequisite that the study patients understood and were able to obey commands. Therefore patients with dementia or learning difficulties or those with a poor understanding of language were excluded from the study.

The patients were randomly divided into 2 groups using sealed envelopes prepared by an unbiased healthcare professional. This randomized Double Blinded study enrolled 60 patients who underwent urological surgery under general anesthesia. Patients were randomized into two groups of 30 each

Group[P] Received 1 ml Of 0.9% Saline Intravenously
Group (m) Received 0.5 mg/kg Iv Of Midazolam.

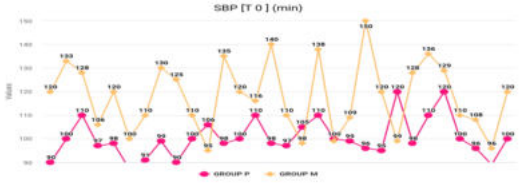
All patients fasted overnight before the surgery. After entering the operating room, iv access was secured and monitoring was performed including lead II electrocardiography, pulse oximetry, arterial line for invasive blood pressure measurements, and bispectral (BIS) index monitoring. Induction was initiated 60 seconds after midazolam/0.9% saline administration with fentanyl2 mcg/kg, propofol until the appropriate depth of anesthesia was reached (BIS ≤ 60), and atracurium 0.5 mg/kg. Orotracheal intubation was performed 3 min after atracurium administration. After checking for and securing adequate tube position, surgeons approached and disinfected the patient, and covered the surgical field.

Systolic/mean arterial pressure (SAP/MAP) and were recorded on 2 occasions: preoperatively (baseline) values (t0), 5minutes (t5) after atracurium administration. We investigated the occurrence of hypotension/hypertension at measurement points defined as MAP lower/higher than 20% of the baseline values

The levels of postoperative anxiety were assessed using the Zung Self-Rating Anxiety Scale (SAS) (raw score). Dose of propofol required for induction was also measured.

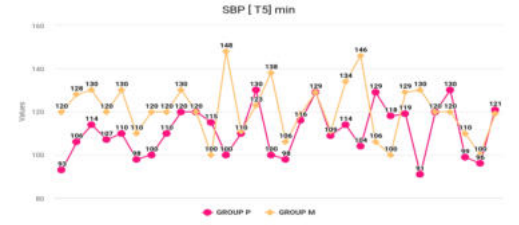
RESULTS

SBP at [T 0] min



Group p (sd) : 8.23 ; group m (sd) :14.29
Two-sample t-test = t-statsistics :-6.51 and p – value <0.0001,much smaller than 0.05,indicating a statistically significant difference in sbp means in group p and group m at time point 0.

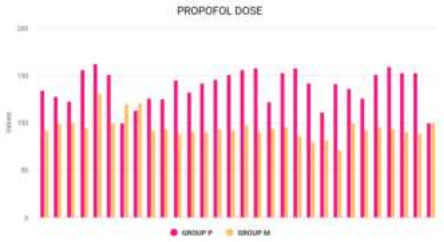
SBP [T5]min



Group p (sd) 11.45 , group m(sd) 11.93, a two sample t- test compares the means of two groups .

T= -6.514; p –value <0.05(difference is statistically significant).

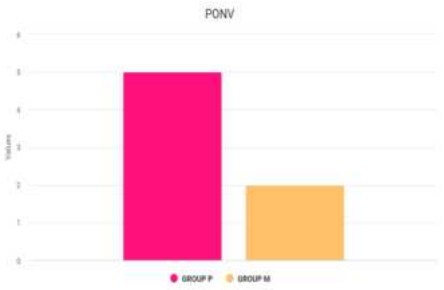
Propofol Dose



Group P (SD) 16.3 ; Group M (SD) 12.3 , t – test suggests t – statistics =8.24.

P value <0.05 ; confidence interval 95%CI : 34.53 to 54.97 [indicating mean propofol dose requirement for group P is significantly higher than Group M ,with a difference of approximately 44. 75units]

Ponv



DISCUSSION

Midazolam has anxiolytic, hypnotic, anticonvulsant, muscle relaxant, and anterograde amnestic effects[7]. Hemodynamic changes (mostly hypotension) can often occur after induction of GA and before surgical incision[8]. Even short periods of hypotension can lead to tissue hypoperfusion and the development of complications that can increase postoperative morbidity and mortality[9].

In our trial, patients in the P group had significantly lower SAP/MAP values immediately after induction than those in the M group This shows that midazolam co-induction has a protective effect against the decline in arterial pressure and possible hypotension in the first minutes of GA compared to propofol alone

HR analysis showed statistically higher values in the P group than in the M group at t5. There were no other statistically significant differences, which is in line with the results of similar studies However, Win et al found that co-induction with midazolam led to a significant increase in HR compared to that in patients who received only propofol.

One of the basic goals of co-induction is the need for a lower dose of the main anaesthetic. Our data confirmed this hypothesis showing that patients receiving midazolam required significantly lower doses of propofol to induce GA. Similar results have been reported in the literature and this trend is particularly significant in elderly patients. One of the basic goals of co-induction is the need for a lower dose of the main anesthetic[10].

CONCLUSION

Our study showed that midazolam co-induction led to a reduction in postoperative anxiety and cortisol levels 60 minutes after surgical incision. SAP/MAP were significantly higher immediately after anesthesia induction in the M group than in the other study groups. The propofol dose required for anesthesia induction was lower when midazolam was used as a co-induction agent.

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Conflict of interest – None declared
Ethical approval – The study was approved by the institutional ethics committee

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