



BISPECTRAL INDEX GUIDED INDUCTION OF GENERAL ANAESTHESIA IN PATIENTS UNERGOING ABDOMINAL SURGERIES

Dr. M.P Santhanakannan

Senior Assistant Professor of Anesthesia Institute of Anaesthesiology, Govt. Rajaji Hospital, Madurai Medical College, Madurai – 625020. corresponding author

Dr. prema M.D

Junior resident of Anaesthesia Institute of Anaesthesiology, Govt. Rajaji Hospital, Madurai Medical College, Madurai – 625020.

ABSTRACT Propofol and Etomidate are induction agents, have similar onset and duration of action. Aim: compare the hemodynamic effects of the infusion of both agents during the induction, upto 10 minutes after the intubation, with guidance of BIS. Methodology: 60 patients of ASA 1 and ASA 2 of age 18 to 60 years undergoing major abdominal surgeries were selected. They were randomized into 2 groups with respect to the anaesthetic agent used for induction of anaesthesia. Propofol group(P group) received propofol at the infusion speed during induction of 0.5 mg/kg/min. Etomidate group (E group) received Etomidate at the infusion rate speed during induction of 0.05 mg/kg/min. the time from start of anaesthetic infusion until loss of eyelash reflex, time until BIS value reach 60, time until endotracheal intubation, mean arterial pressure, heart rate, spo2 were observed and recorded in both groups. Results: etomidate group causes increase in heart rate and blood pressure after intubation. In propofol group there was a significant hypotension noted compared to etomidate group even with reduced doses using the BIS guided protocol

KEYWORDS : Propofol, Etomidate, Hemodynamic effects, Heart rate, Bis

1. INTRODUCTION

Propofol and Etomidate are induction agents, have similar onset and duration of action.[1] Most studies which were done earlier compared the hemodynamic effects of both agents; they were performed without monitoring the depth of anaesthesia. The titration of both of anaesthetic to an appropriate depth of anaesthesia will reduce their anaesthetic required dose and alleviate negative hemodynamic effect after intubation.[1] The aim of our study to compare the hemodynamic effects of the infusion of both agents during the induction, upto 10 minutes after the intubation, with guidance of BIS.

2. METHODS AND MATERIALS:

After obtaining institutional ethical committee approval and the informed written consent was obtained from the patients participating in the study. 60 patients of ASA 1 and ASA 2 of age 18 to 60 years undergoing major abdominal surgeries were selected. They were randomized into 2 groups with respect to the anaesthetic agent used for induction of anaesthesia.

Propofol group(Pgroup) received propofol at the infusion speed during induction of 0.5 mg/kg/min. Etomidate group (E group) received Etomidate at the infusion rate speed during induction of 0.05 mg/kg/min. Inside OT the following monitors like pulse oximetry, ECG, NIBP, BIS monitor, Capnography were attached. The base line BP, PR, SPO2 were measured.

Patient preoxygenated with 100% O2 for 3 minutes, Inj.Fentanyl 2 mcg/kg given Intravenously, after 2 mins of Fentanyl an infusion of induction agent started, once the BIS value reached 60 the infusion was stopped and consumed dose was noted by the independent contributor.

We measured the time from start of anaesthetic infusion until loss of eyelash reflex, time until BIS value reach 60, time until endotracheal intubation, mean arterial pressure, heart rate and spo2. After loss of eyelash reflex succinylcholine 1.5 mg/kg was given and intubated. Each intubation was successful at first attempt. Anaesthesia maintained with N2O:O2 1:1 and titrated doses of Inj. Atracurium.

STATISTICAL ANALYSIS:

The information collected regarding all selected cases were recorded in master chart. Data analysis was done with the help of computer by using SPSS 16 software. Using this software mean, standard deviation and P value were calculated through One way ANOVA, Chi-Square test and P value of <0.05 was taken as significant.

3. RESULTS:

The study was concluded in 60 patients. No significant difference between the two groups with respect to patient characteristic and baseline hemodynamics. The mean consumed anaesthetic dose was 1.7 mg/kg for propofol and 0.21 mg/kg for etomidate. The time from

start of anaesthetic infusion until loss of eye lash reflex and the time until reach BIS value 60 and the time until endotracheal intubation was significantly longer in ETOMIDATE group compared with propofol group. Before intubation there was no significant hemodynamic difference in both the groups. After intubation in the propofol group the MAP was significantly decreased with respect to baseline. In the propofol group MAP was significantly lower than etomidate group ($p < 0.001$). In etomidate group after intubation the MAP was significantly higher up to 10 minutes compared to propofol group. In etomidate group there was a significant increased pulse rate observed after intubation up to 7 minutes compared to baseline. In propofol group there was a significant decreased pulse rate observed 4,7,10 minutes after intubation compared to baseline.

TABLE 1: COMPARISON BETWEEN TWO GROUPS

| | PROPOFOL | ETOMIDATE | P VALUE |
|------------------------------------|-----------|-----------|---------|
| Age | 45.833 | 47.3 | 0.521 |
| Sex (M/F) | 13/17 | 14/16 | 0.855 |
| Weight | 50.23 | 49.63 | 0.817 |
| Time until BIS reach 60 | 204.567 | 270.2 | <0.001 |
| Time until loss of eyelash reflex | 190.633 s | 251.833 s | <0.001 |
| Time until endotracheal intubation | 295.4 | 350.957 | <0.001 |
| SPO2 | 99.533 | 99.5 | 0.8 |

TABLE 2: COMPARISON OF MEAN ARTERIAL PRESSURE

| MAP | PROPOFOL | ETOMIDATE | P VALUE |
|-------------------------|----------|-----------|---------|
| Baseline | 96.8 | 97.233 | 0.154 |
| 1 min before induction | 93.133 | 92.233 | 0.562 |
| At induction | 81.967 | 91 | <0.001 |
| 1 min before intubation | 81.767 | 94 | <0.001 |
| 1 min after intubation | 84.2 | 99.467 | <0.001 |
| 4 min | 69.833 | 102.1 | <0.001 |
| 7 min | 67.633 | 98.1 | <0.001 |
| 10 min | 66.033 | 96.133 | <0.001 |

TABLE 3: COMPARISON OF PULSE RATE

| MAP | PROPOFOL | ETOMIDATE | P VALUE |
|-------------------------|----------|-----------|---------|
| Baseline | 83.867 | 83.033 | 0.057 |
| 1 min before induction | 82.167 | 82.233 | 0.874 |
| At induction | 79.933 | 85.733 | <0.001 |
| 1 min before intubation | 73.8 | 89.933 | <0.001 |
| 1 min after intubation | 78.167 | 100.367 | <0.001 |

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|--------|------|--------|--------|
| 4 min | 72.1 | 90.133 | <0.001 |
| 7 min | 65.5 | 88.261 | <0.001 |
| 10 min | 73.9 | 86.067 | <0.001 |

TABLE 4: COMPARISON OF BIS VALUE

| MAP | PROPOFOL | ETOMIDATE | P VALUE |
|-------------------------|----------|-----------|---------|
| Baseline | 94.433 | 94.067 | 0.498 |
| 1 min before induction | 94.133 | 94.067 | 0.909 |
| At induction | 57.8 | 59.433 | 0.002 |
| 1 min before intubation | 55.9 | 56.6 | 0.184 |
| 1 min after intubation | 48.6 | 49.267 | 0.167 |
| 4 min | 57.967 | 59.7 | 0.001 |
| 7 min | 59.867 | 62.137 | <0.001 |
| 10 min | 62.133 | 63.5 | 0.011 |

4. CONCLUSION:

In our study with the use of BIS guided protocol the etomidate group causes increase in heart rate and blood pressure after intubation. In propofol group there was a significant hypotension noted compared to etomidate group even with reduced doses using the BIS guided protocol.our study results were similar to previous studies. [2,3,4] We also found that the depth of anaesthesia well maintained in propofol than etomidate.

5.ACKNOWLEDGEMENT:

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