Journal of Pharmaceutical Research International

33(58B): 15-18, 2021; Article no.JPRI.72182
ISSN: 2456-9119
(Past name: British Journal of Pharmaceutical Research, Past ISSN: 2231-2919, NLM ID: 101631759)

Comparison of Efficacy of Preloading With 0.9% Normal Saline with Premptive Dose of Ephedrine for Attenuation of Hemodynamic Response during Propofol Induction

R. Ramanan [a*]

[a] *Department of Anaesthesiology, Pain Medicine and Critical Care, Sree Balaji Medical College & Hospital (Affiliated to Bharath Institute of Higher Education and Research), Chennai, Tamil Nadu, India.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i58B34164

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/72182

Original Research Article

Received 10 October 2021
Accepted 14 December 2021
Published 15 December 2021

ABSTRACT

Two different regimes propofol-normal saline vs propofol -ephedrine in prevention of hypotension during induction of anaesthesia, significant decrease in Systolic blood pressure (P<0.001) in both groups (both fluid and non-fluid groups) after induction of anaesthesia with propofol was observed. The incidence of hypo-tension was significant in control and crystalloid group when compared with ephedrine group. Systolic blood pressure decreased in all three groups and decrease in Systolic blood pressure at 2min, 3min and 5min with P values. 0.010, 0.00, 0.000 respectively. Also decrease in Mean Arterial pressure in P group when compared with E-group at 1, 2, 3, 4, and 5min with P values 0.038, 0.02, 0.012 and 0.029 respectively.

Keywords: Anesthesia; mean arterial pressure; hypotension.

1. INTRODUCTION

Propofol is a widely used induction agent owing to its advantages like rapid induction and recovery, less incidence of post operative discomforts. Hypotension is one of the major disadvantage of this propofol and hence various measures have been take to avoid this by pre-

**Corresponding author: E-mail: shahrukh.f010@gmail.com;*

loading with fluids and use of vasopressors including ephedrine, dopamine and dobutamine [1-2]. The present study compared two different regimes, 0.9% Normal Saline and intra venous ephedrine for prevention of hypotension during induction of anaesthesia with propofol. Although a very attractive anesthetic drug, propofol has no neuromuscular blocking properties and a muscle relaxant may be needed to facilitate laryngoscopy for tracheal intubation. Recently, there has been an enthusiasm for the combined use of propofol and remifentanil to avoid the need for short acting muscle relaxants like succinylcholine.[5] This combination has also been proposed to avoid complications such as anaphylactic reaction, residual curarisation and awareness, which are sometimes seen with the use of neuromuscular blocking agents during general anesthesia.[6] Using a combination of propofol and remifentanil for anesthesia induction however, may have negative synergistic effects on patient's hemodynamic status leading to bradycardia and hypotension.

2. METHODOLOGY

Patients were assigned by pre-randomized sealed envelopes into two groups. They were pre-medicated with Injections. Group P with 25 patients were pre-loaded with 0.9% Normal Saline 20ml/kg 20minutes before surgery and group E with 25 patients were given 0.2mg/kg of ephedrine along with propofol. Variables like Heart rate, Systolic blood pressure, Diastolic blood pressure, Mean Arterial pressure were measured before induction (baseline) during induction and at 1, 2, 3, 4 and 5 minutes respectively.

3. RESULTS

In the P group the heart rate from base line has increased from 90.72 ± 15.523 /min to 91.04 ± 22.661/min post induction and has further increased to 91.36 ± 15.030/min at 1min and finally decreased to 91.60 ± 15.761 at 5 mins. In the Ephedrine group the percentage of change of heart rate from base line has increased from 91.64 ± 12.589/ min to 98.88 ± 13.935/min post induction and has further increased to 1.96 ±13.412 at 1 min and reached to 103.12 ± 15.273/min at 5 mins. On comparing the P group and ephedrine at varied intervals the decrease was not statistically significant in P group. (P<0.05) (Table 1).

Table 1. Comparison of mean pulse rate among the groups

Pulse Rate (beats/min)	Group P (n = 25)	Group E (n = 25)	P value P v/s E
Pre- Induction	90 .72 ± 15.523	91.64 ± 12.589	0.039
Immediate Induction	91.04 ± 22.661	98.88 ± 13 .935	0.072
1 min Post- Induction	91. 36 ± 15.030	102 .96 ±13.412	0.020
2 min Post- Induction	92 . 12 ± 16.481	104.60 ± 13.134	0.0 21
3 min Post- Induction	92 .32 ± 16.v5 1	105.20 ± 14.370	0.0 21
4 min Post- Induction	92.48 ± 15.854	104.60 ± 14 .737	0.622
5 min Post- Induction	91.60 ± 15 .761	103 .12 ± 15 . 273	0.050

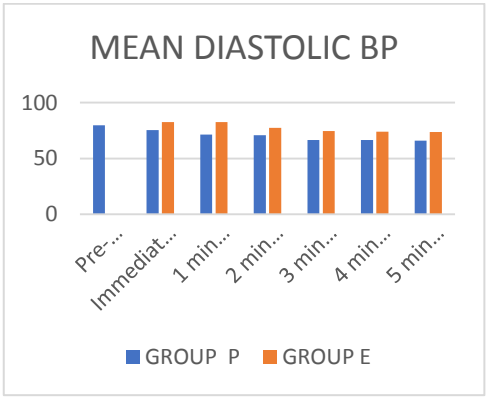

Fig. 1. Mean diastolic blood pressure

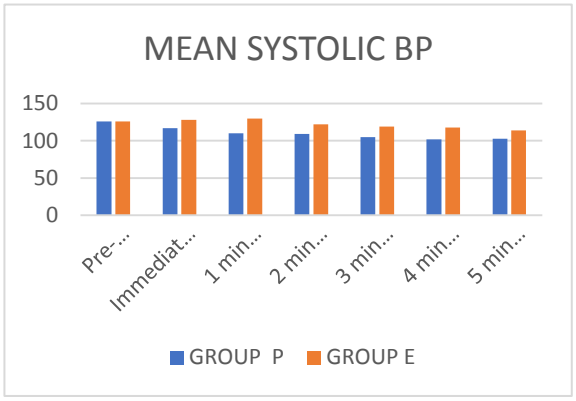

Fig. 2. Mean systolic blood pressure

The change in the systolic blood pressure was maximum post induction which was noticed in the ephedrine group followed by P group. However, on comparing them at varied intervals the decrease was not statistically significant in Ephedrine group. (P<0.05) (figure:1) In the P group, the diastolic blood pressure from base line has decreased from 79.64 ± 6.903 mmHg to 75.36 ± 9.699 mmHg post induction and -71.40 ± 9.815 mmHg at 1 min and to 66.04 ± 7.898 at 5 mins. In the ephedrine group the diastolic blood pressure from base line has increased from 80.08 ± 6. 763 Mm Hg to 82.56 ± 8.052 mmHg (Fig. 2).

4. DISCUSSION

It is very evident from the above results that there is a statistically significant decrease in Systolic blood pressure ,Diastolic blood pressure, Mean arterial pressure in the pre-loaded group(P<0.05) when compared to the E-group at various time intervals. The observations were consistent with the study conducted by R.J.Turner et al, Vikas Dutta et al[3-5],where there was a significant decrease in Systolic blood pressure (P<0.001) in both groups with propofol. The incidence of hypo-tension was significant in control and crystalloid group when compared with ephedrine group. In our study, there had been a statistically significant increase in Systolic blood pressure at 2min, 3min and 5min respectively in E group when compared with P group and decrease in Diastolic blood pressure in P group when compared with E- group at lmin, 2min, 3min, 4min and 5min with P values these results are consistent with study conducted by the study conducted by Gamlin, also proved that there had been a statistically significant increase in base line systolic (P=0.004) and diastolic (P=0.031) pressures, with addition of ephedrine. From the above study it's clear that, administration of ephedrine helps to attenuate the fall in blood pressure in response to propofol + fentanyl induction than pre-loading with 0.9% Normal saline.

5. CONCLUSION

HES 130/0.4 preload reduced the incidence of hypotension, the duration of longest hypotension, and the need for ephedrine during spinal anaesthesia for elective caesarean section. However, the efficacy of HES 130/0.4 alone in prevention of maternal hypotension during spinal anaesthesia for caesarean section is still insufficient.

ETHICAL APPROVAL

As per international standard or university standard ethical approval has been collected and preserved by the authors.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Claeys MA, gepts E, Camu F. Haemodynamics changes during anaesthesia induced & maintained with propofol. BJA. 1988;60:3-9.
2. Grounds RM, Twisley AJ, Carli F, whitwham JG, Morgan M. Haemodynamic effects of i.v. induction anaesthesia. 1985;40:735-740.
3. Turner RJ, Gatt SP. Kam PC, Ramzan I, Dalley M. Administration of crystalloid fluid does not prevent the decrease in arterial B.P after induction of anaesthesia with propofol & fentanyl. BJA. 1998;80:737-41.
4. Arndt Jo. Mikat M, Parasha C. Fentanyl 's analgesic, respiratory andcardio vascular action in relation to dose & plasma concentration in unanaesthized dogs. Anaesthesiology. 1984;61:355-361.
5. Van aken H, Meinshausen E, prien T, Brussel T, Lawin. P the influence of fentanyl and tracheal intubation on haemodynamcis effects of anaesthesia induction with propofol. Anaesthesiology. 1988;68-157-16.
6. Coates DP, Monk CR, Pi.,•J-Roberts C, Turtle M. Haemodynamic effects of infusion of the emulsion formulation of propofol during nitrous oxide anaesthesia in humans. Anaesthesia 1987;66:64-70.
7. Muzi M, Berens RA, Kampine JP, Ebert TJ. Venodilation contributes to propofol - mediatedhypotension in humans. Aneasth Analg. 1992;74:877 .8
8. Brussel T, Theissen IL, Vie fusson G et al. Hemodynamci and cardio dynamics effects of propofol & etomidate. Negative

inotrophic effects of propofol. Anesth Analg. 1989;69:3-40.

9. Coetzee A, Fourix P, Coetzee J, et al., effects of various propofol plasma concentartion on regional myocardial contractility & left ventricular afterload. Anesth Analg. 1989;69:473.483.

10. Page 1 l's, Wartlier DC. Negative inotrophic effects of propofol as evaluated h_ the regional pre - load recruitable stroke work relationship in chronically instrumented dogs. Anesthesiology. 1993; 78:100-8.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/72182