

To Observe Haemodynamic Changes On Intubating The Patients Using Propofol And Fentanyl Without The Use Of Muscle Relaxants.

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Abstract:

Background&Method: The study was conducted with an aim to observe Haemodynamic changes on Intubating the patients using Propofol and Fentanyl without the use of Muscle Relaxants on 50 normotensive patients of either sex between age 20-50 years. ASA grade I/II at Sanjay Gandhi Medical College, Rewa, M.P.A detailed preanaesthetic assessment was done. Patients seeming to have factors responsible for difficult intubation, (receding mandible, buck teeth, bull neck, etc.) or contraindication to use of Propofol or Fentanyl were excluded from the study. Weight of all patients was noted. Written consent was taken and patients were kept NPO overnight.

Result:The patient is not totally paralysed, slight vocal cord movement was seen in 43 cases. Slight diaphragmatic movement like a small hiccup was seen in 20 cases, mild cough was seen in 7 cases, moderate mandibular relaxation was seen in 14 cases. Limb movement was not obtained in any patient. Therefore movement of vocal cords was the commonest factor which was seen to lower the score from 8-9 to 6-7 (excellent to good conditions).However, slight movement of partially abducted vocal cords was enough to allow placement of ETT in first attempt in 41 cases with acceptable intubating conditions (89%) within 2 minutes of administration of InjPropofol.

Conclusion: Acceptable intubating conditions were obtained in 92% patients i.e. 46 patients. One patient had ideal intubating condition (score 9). 15 patients achieved excellent intubating conditions. In these 15 patients, trachea could be intubated easily with cords showering slight movement in partial abduction. These patients achieved a score of 8. Good intubating conditions were obtained in 30 patients with intubating scores between 6-7, slight vocal cord movement of partially abducted cords with slight diaphragmatic movement on placement of the tube was observed. We conclude that Inj. Propofol 2.5 mg/kg preceded by Inj. Fentanyl citrate 2 mcg/kg 5 minute earlier provided good intubating conditions without the use of a muscle relaxant.

Keywords: Haemodynamic, Intubating, Propofol and Fentanyl.

Study Designed: Observational Study.

1. INTRODUCTION

Propofol pharmacokinetics is characterized by a three compartment linear model. After a single bolus dose, there is fast distribution from blood into tissues (t_{1/2} alpha : 8-8.3 min.), high metabolic clearance (t_{1/2} beta : 34-66 min.) and a terminal slow elimination from poorly perfused tissues (t_{1/2}

gamma : 184 - 480 min.). These properties account for Propofol's rapid onset and short duration of action[1]. Distribution time decreases as tissues equilibrate with plasma and become saturated.

Propofol is metabolised via hepatic conjugation to inactive water-soluble metabolites, which are excreted by the kidneys. Propofolglucuronide accounts for about 50 % of the administered dose. The remainder consists of 1-and 4-glucuronide and 4-sulphate conjugates of 2,6-diisopropyl 1,4-quinol. Less than 1% Propofol is excreted unchanged in urine and only 2 % is excreted in faeces[2].

Propofol is rapidly metabolized in the liver by conjugation to glucuronide and sulphate to produce water soluble compounds which are excreted by the kidneys[3&4]. Lungs are responsible for 30% of the uptake and first pass elimination after a bolus dose. When a subanaesthetic dose was given intravenously to six male volunteers in a study in the mean dose of 0.47 mg/kg, 88% of the administered radioactivity was recovered in the urine, while less than 2% was excreted in the faeces. Analysis of the radioactive material excreted in the urine revealed that less than 0.3% was unchanged Propofol while about 40% was Propofolglucuronide and the rest consisted of 1 and 4 glucuronide and 4 sulphate conjugates of 2,6 – diisopropyl 1,4 quinol. Metabolism of Propofol is rapid[5]. In the above study, unchanged Propofol accounted for 94% of radio-active material in blood 2 mins after injection but after 30 mins, 81% of the radioactivity was in the form of metabolites.

2. MATERIAL & METHOD

The study was conducted on 50 normotensive patients of either sex between age 20-50 years. ASA grade I/II at Sanjay Gandhi Medical College, Rewa, M.P from duration Dec 2020 - Nov 2021. All patients were scheduled for elective surgical procedure in the Department of Surgery, Orthopaedics, Gynaecology and ENT.

A detailed preanaesthetic assessment was done. Patients seeming to have factors responsible for difficult intubation, (receding mandible, buck teeth, bull neck, etc.) or contraindication to use of Propofol or Fentanyl were excluded from the study. Weight of all patients was noted. Written consent was taken and patients were kept NPO overnight.

Boyles apparatus with Flutec vaporizer with 20 ml, 10 ml, 5 ml, 2 ml syringes. Intracath of suitable gauge, drip set, adhesive micropore, K.Y. lubricating jelly. Macintosh Laryngoscope, Guedels airways, Magills forceps, endotracheal tubes (red rubber cuffed) of sizes 7-11 mm, Bainscircuit, Magills circuit, stop watch, sphygmomanometer, stethoscope, suction apparatus, pulse oximeter, weighing machine.

Preinduction observations included:

- Pulse rate
- NIBP
- SPO2
- R/R (Respiratory Rate)

3. RESULTS

Table 01: Type of Procedure

Procedure	Cases	
	Number	Percentage
Surgery	27	54
Orthopaedics	13	26
Obstetrics &Gynaecology	4	8

Cases included in the study were mainly from Department of General Surgery and Orthopaedics.

Table-02: Scoring of Intubating conditions

Scores	Cases	
	Number	Percentage
8 – 9	16	32
6 – 7	30	60
3 – 5	04	08
0 – 2	00	00

Excellent intubating conditions: 32 %

Good intubating conditions: 60 %

Fair intubating conditions: 08 %

Acceptable intubating conditions (intubating scores 6 – 9) were obtained in 92% patients.

Out of these ideal intubating conditions (score 9) were obtained in one patient = 2.17%

Excellent intubating conditions – score 8 were obtained in $15/46 \times 100 = 32.60\%$

Good intubating conditions – score 6-7 were obtained in $30/46 \times 100 = 65.22\%$

As the patient is not totally paralysed, slight vocal cord movement was seen in 43 cases. Slight diaphragmatic movement like a small hiccup was seen in 20 cases, mild cough was seen in 7 cases, moderate mandibular relaxation was seen in 14 cases. Limb movement was not obtained in any patient. Therefore movement of vocal cords was the commonest factor which was seen to lower the score from 8-9 to 6-7 (excellent to good conditions).

However, slight movement of partially abducted vocal cords was enough to allow placement of ETT in first attempt in 41 cases with acceptable intubating conditions (89%) within 2 minutes of administration of InjPropofol. In the rest 5 patients intubation was successful in second attempt after 3 minutes of administration of InjPropofol (11% cases).

4. DISCUSSION

McKeating, Bali and Dundee (1988)[6] showed that propofol provides better jaw relaxation and attenuation of laryngeal reflexes than thiopentone. Following this, propofol has been widely used for intubation. In our study mandibular relaxation was good in all patients and laryngoscopy was easy in every case.

Vocal cord movement and slight diaphragmatic movement seen in some cases however was lesser in our study compared with the study conducted by Braga et al[5].

Striebel and colleagues[7] found no significant difference in the intubating conditions using thiopentone (5.5 mg kg⁻¹)/ fentanyl 100 mcg / succinylcholine (1 mg kg⁻¹) and the combination of propofol (24 mg kg⁻¹)/fentanyl 100 mcg. This correlates well with our study in which intubating conditions were as good as those obtained after paralyzing the patient with a muscle relaxant[8].

Our results are also consistent, who achieved successful intubation in all patients given propofol and opioid for induction. Not all hypnotic agents provide ideal conditions for laryngoscopy and intubation with minimal risk of respiratory airway injury[9]. Propofol is superior to barbiturates in decreasing muscle tone and abolishing laryngeal responses to tracheal intubation or to LMA insertion even when used alone. However addition of fentanyl decreases the dose of propofol required for LMA insertion as shown by Goyagi, Tanaka et al (2003).[4]

5. CONCLUSION

Acceptable intubating conditions were obtained in 92% patients i.e. 46 patients. One patient had ideal intubating condition (score 9). 15 patients achieved excellent intubating conditions. In these 15 patients, trachea could be intubated easily with cords showering slight movement in partial abduction. These patients achieved a score of 8. Good intubating conditions were obtained in 30 patients with intubating scores between 6-7, slight vocal cord movement of partially abducted cords with slight diaphragmatic movement on placement of the tube was observed. We conclude that Inj. Propofol 2.5 mg/kg preceded by Inj. Fentanyl citrate 2 mcg/kg 5 minute earlier provided good intubating conditions without the use of a muscle relaxant.

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