Efficiency between ketofol and propofol in minor surgical procedure in Bangladesh

Authors

Dr Mohd. Sarwar Husain1*, Dr Osman Goni2, Dr Zakir Hossain3

1Assistant Professor, Dept. of Anaesthesiology, Colonel Malek Medical College, Manikgonj, Bangladesh
2Assistant Professor, Dept. of Surgery, Colonel Malek Medical College, Manikgonj, Bangladesh
3Assistant Professor, Dept. of Anaesthesiology, Colonel Malek Medical College, Manikgonj, Bangladesh

*Corresponding Author

Dr Mohd. Sarwar Husain

Abstract

Objective: To evaluate efficiency between ketofol and propofol in minor surgical procedure in Bangladesh.

Methods: This experimental study is conducted at tertiary medical college and hospital, from March 2019 to March 2020, where 200 between 21-50 years old with the ASA physical status class I and II were included in the study.

Result: During the study, most of the patients in both groups belong to 31-40 years age group, 51% and 63%, followed by 36% and 30% in 21-30 years age group, 8% and 7% in 41-50 years age group. In group-A, 9% had postoperative pain where as in group-B it was 16%. In group-A, 14% had decreased level of SPO2<90% where as in group-B it was 22% followed by 11% had apnea in group-A whereas in group B it was 9%. Also, in group A 3% had slow respiration, in group B it was 7%.

Conclusion: From result and observation we can say that, the combination of ketamine and propofol (ketofol) has several advantages over the propofol alone for the anesthesia in minor surgical procedures. The combination has less antagonistic effects than the either drug alone due to their complementary effects of lowering the dose of both drugs. Further study is essentially needed for better outcome.

Keyword: ketofol, propofol, surgical procedure.

Introduction

Patients who attend the hospital for any form of operative procedure frequently undergo physical or mental pain and agitation. This causes significant tachycardia, hypertension, vasoconstriction, increase in oxygen consumption, blunting of immune response, and salt and water retention. Also, these patients are extremely anxious. It is important to choose the most appropriate form of anesthesia for induction for the analgesia or sedation.1 Minor surgical procedures are outpatient daycare procedures in which patients are admitted, surgical interventions are performed and discharged at the same day. Such outpatient anesthesia demands a safe anesthesia method with the short acting intravenous anesthetic medications, which are able to provide rapid anesthesia depth and hemodynamic stability, rapid metabolism and minimum adverse effects in the recovery period.2-4 Ketamine and propofol has been used in separate syringes in the same patient successfully in variety
of procedures including sedation of spinal anesthesia, minor ophthalmological procedures, gynecological and surgical procedures in children and adults. The main advantage of this combination is the opposing effect in the hemodynamic and respiratory effects of each drug. In a prospective study carried in 1264 patients undergoing anesthesia for the surgical procedures with Ketofol (ketamine with propofol), concluded that this combination is safe and effective. In this study our main goal is to evaluate efficiency between ketofol and propofol in minor surgical procedure in Bangladesh.

**Objective**

**General Objective**
- To evaluate efficiency between ketofol and propofol in minor surgical procedure in Bangladesh.

**Specific Objective**
- To detect intraoperative complication.
- To identify postoperative complications.

**Methodology**

| Type of study          | Experimental study |
|------------------------|--------------------|
| Place of study         | Tertiary medical college and hospital. |
| Study period           | March 2019 to March 2020 |
| Study population       | 200 between 21-50 years old with the ASA physical status class I and II were included in the study. |
| Sampling technique     | Purposive |

**Method**

During the study, after taking consent from the patients. All patients were induced with 1 mg of inj butorphanol and 2mg of Inj midazolam intravenously. The study solution of Group A was prepared with 50 mg (1 ml) of Ketamine, 50 mg (5 ml) of Propofol and 4 ml of Normal Saline (NS) in a 10 ml syringe. The ratio of 1:1 was designed for ketofol group. Group A patients received 50 mg (5 ml) Ketofol (25 mg) ketamine and 25 mg propofol) and Group B received 50 mg (5 ml) of propofol.

**Data Analysis**

After collection, data were entered into a personal computer and were edited, analyzed, plotted in graphs and tables. Data were analyzed by chi square test, Mann Whitney U tests, using the statistical package for social sciences (SPSS) version 20.

**Results**

In table-1 shows age distribution of the patients where most of the patients in both groups belong to 31-40 years age group, 51% and 63%, followed by 36% and 30% in 21-30 years age group, 8% and 7% in 41-50 years age group. The following table is given below in detail:

| Age group | Group-A, % | Group-B, % |
|-----------|------------|------------|
| 21-30     | 36%        | 30%        |
| 31-40     | 51%        | 63%        |
| 41-50     | 8%         | 7%         |

In figure-1 shows gender distribution of the patients where in group-A 44% were male, 56% were female. Where as in group-B 38% were male and 62% were female. The following figure is given below in detail:

![Gender distribution of the patients](image)

**Figure-1: Gender distribution of the patients**

In table-2 shows duration of the surgery where in group-A, it was $16.20 \pm 9.5$ min whereas in group-B it was $18.20 \pm 9.5$. The following table is given below in detail:
Table 2: Duration of the surgery

| Duration of surgery | Group-A        | Group-B        |
|---------------------|----------------|----------------|
|                     | 16.20 ± 9.5 min| 18.20 ± 9.5 min|

In figure 2 shows intraoperative complication where in group-A, 14% had decreased level of SPO2 < 90% whereas in group-B it was 22% followed by 11% had apnea in group-A whereas in group B it was 9%. Also, in group A 3% had slow respiration, in group B it was 7%. The following figure is given below in detail:

Figure 2: Intraoperative complication

In table 3 shows comparison of anesthesia parameters where mean induction time for group-A was 30.19±4.18 whereas in group-B it was 41.34±5.13. The following table is given below in detail:

Table 3: Comparison of anesthesia parameters

| Age group       | Group-A, % | Group-B, % |
|-----------------|------------|------------|
| Mean induction time | 30.19±4.18 | 41.34±5.13 |
| Mean recovery time (min) | 4.25±2.20 | 5.14±3.50 |
| Study solution   | 9.18±4.35  | 13.42±3.26 |

In figure 3 shows postoperative complications where in group-A, 9% had postoperative pain whereas in group-B it was 16%. The following figure is given below in detail:

Figure 3: Postoperative complications

Discussion

Propofol is an IV anesthetic agent used for the induction and maintenance of intravenous anesthesia. The recovery from the propofol induced anesthesia is generally rapid with less frequent side effects than other inducing agents. Ketamine and propofol in combination in separate syringes have been used successfully for the analgesia for minor procedures in adults and children by several authors.\(^4\)\(^\text{5}\) This combination has the property of the opposite respiratory and cardiovascular effects of each drug.\(^4\)\(^\text{5}\) This combination also reduces the dose of expensive drug propofol to achieve the desired effect. The combination has the less adverse effects than the either drug alone due to their complementary effects of lowering the dose of both drugs. One study used different concentration of ketamine–propofol combination for sedation for female patients undergoing breast biopsy and did not encounter any severe respiratory complications.\(^5\)

All patients were comfortable in the postoperative room and discharged after four hours of surgery and no any patient was admitted due to the postoperative complications. The only seen postoperative complications were pain, nausea and vomiting and all treated successfully and discharged at the same day. In one study 19 patients had shallow and slow respiration and 5 patients had apnea in propofol group whereas 13 patients had shallow and slow respiration and 7 had apnea in ketofo group.\(^8\)
Where as in our study in group-A (ketofol), 14% had decreased level of SPO2<90% where as in group-B it was 22% followed by 11% had apnea in group-A whereas in group B it was 9%. Also, in group A 3% had slow respiration, in group B it was 7%.

The mean induction time required for the Ketofol group was 32.18±4.17 sec and for propofol group it was 39.34±5.12sec. which was quite similar to our study where mean induction time for group-A (ketofol) was 30.19±4.18 where as in group-B (propofol) it was 41.34±5.13.

Conclusion
From result and observation, we can say that, the combination of ketamine and propofol (ketofol) has several advantages over the propofol alone for the anesthesia in minor surgical procedures. The combination has less antagonistic effects than the either drug alone due to their complementary effects of lowering the dose of both drugs. Further study is essentially needed for better outcome.

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