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Original Research

Keto folversus Propofol for electroconvulsive therapy

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ABSTRACT:
Background: Common drugs used for ECT anesthesia are Methohexital, Thiopental, Etomidate, and Propofol. The present study was conducted to compare Ketofol and Propofol for electroconvulsive therapy. **Materials & Methods:** 60 patients with motor seizurewas randomized into two groups of 30 each. Group I were given an initial dose of 0.5mg/kg Propofol. Group IIwere administered an initial dose of 0.5mg/kg Ketofol (0.25 mg/kg of Propofol + 0.25 mg/kg of ketamine). Parameters such as motor seizure duration, hemodynamicprofile and recovery times were recorded. **Results:** Motor seizure duration (sec) was 24.5 in group I and 30.4 in group II, time of spontaneous breathing (sec) was 322.1 in group I and 290.2 in group II, time of spontaneous eye-opening (sec) was 545.8 in group I and 504.8 in group II and time of obeying commands (sec) was 710.3 in group I and 725.2 in group II. The difference was non- significant (P> 0.05). At baseline, mean heart rate (bpm) was 86.5 and 87.2, systolic BP (mmHg) was 120. 4 and 125.5, diastolic BP (mmHg) was 80.2 and 78.0, MAP (mmHg) was 96.4 and 91.3 and SPO2 (%) was 98.2 and 98.1 in group I and II respectively. The difference was non- significant (P> 0.05). The mean heart rate was 92.3 and 102.7, SBP (mm Hg) was 134.2 and 138.4, DBP (mm Hg) was 87.5 and 88.2, MAP was 102.6 and 104.6 and SPO2(%) was 98.2 and 98.4 in group I and II respectively. The difference was non- significant (P> 0.05). **Conclusion:** There was no difference in recovery parameters. Both Ketofol and Propofol produced adequate motor seizure duration.
Key words: Ketofol, Propofol, Electroconvulsive therapy

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INTRODUCTION

Electroconvulsive therapy (ECT) is the first-line treatment for patients with acute mania, mood disorders, severe depression, and catatonia.[1]Research revealed treatment effectiveness is associated with the seizure duration during ECT. An ECT treatment has uncertain therapeutic benefits if motor seizure duration is less than 15 seconds or if motor seizure duration persists for a prolonged time.[2] Treatment may be considered adequate only if the patient has had a generalized seizure that exceeds a predetermined minimum duration, in which 20 to 30 secondsare requested for motor seizure or 30 to 40 seconds are requested for electroencephalographic (EEG) manifestations.[3]Seizures exceeding 120 seconds is considered as prolonged seizure and should be terminated with intravenous benzodiazepines.[4]

Common drugs used for ECT anesthesia are Methohexital, Thiopental, Etomidate, and Propofol. Propofol has fast induction, smooth recovery, and minimal post-operative agitation.[5] Its hypotensive effect is beneficial in counteracting ECT induced hypertension; however, disadvantage of propofol is dose-dependent decrease in seizure duration. Ketofolis recently being tried as an induction agent in ECT. The cardiovascular properties of both propofol and ketamine balance each other in maintaining hemodynamic stability.[6] The present study was conducted to compare Ketofol and Propofolfor electroconvulsive therapy.

MATERIALS & METHODS

The present study consisted of 60 patients with motor seizureof American Society of Anesthesiologists (ASA) physical status I and II of either gender. All gave their written consent for the participation of the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 30 each.Group I were given an initial dose of 0.5mg/kg Propofol. Group IIwere administered an initial dose of 0.5mg/kg Ketofol (0.25 mg/kg of Propofol + 0.25 mg/kg of ketamine). Baseline hemodynamic parameters such as SBP, DBP, MAP, SPO2and HR were recorded. Parameters such as motor seizure duration, hemodynamicprofile and recovery times were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Assessment of parameters

Parameters	Group P	Group K	P value
Motor seizure duration (sec)	24.5	30.4	0.05
Time of spontaneous breathing (sec)	322.1	290.2	0.94
Time of spontaneous eye-opening (sec)	545.8	504.8	0.81
Time of obeying commands (sec)	710.3	725.2	0.97

Table I shows that motor seizure duration (sec) was 24.5 in group I and 30.4 in group II, time of spontaneous breathing (sec) was 322.1 in group I and 290.2 in group II, time of spontaneous eye-opening (sec) was 545.8 in group I and 504.8 in group II and time of obeying commands (sec) was 710.3 in group I and 725.2 in group II. The difference was non-significant (P> 0.05).

Table II: Hemodynamic parameters at baseline

Parameters	GroupI	GroupII	P value
Heartrate(bpm)	86.5	87.2	0.91
SystolicBP(mmHg)	120.4	125.5	0.94
DiastolicBP(mmHg)	80.2	78.0	0.81
MAP(mmHg)	96.4	91.3	0.62
SPO2(%)	98.2	98.1	0.91

Table II, graph I shows that at baseline, mean heart rate (bpm) was 86.5 and 87.2, systolic BP (mmHg) was 120. 4 and 125.5, diastolic BP (mmHg) was 80.2 and 78.0, MAP (mmHg) was 96.4 and 91.3 and SPO2 (%) was 98.2 and 98.1 in group I and II respectively. The difference was non- significant (P> 0.05).

Graph I: Hemodynamic parameters at baseline

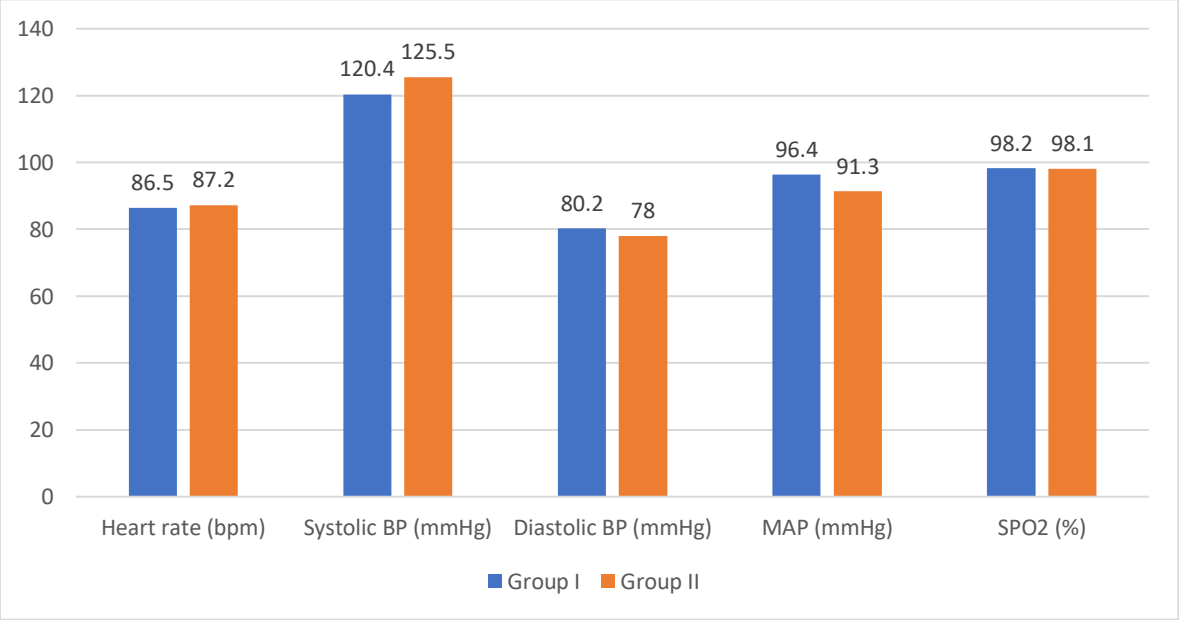

Table III: H**emodynamic parameters after end of seizure**

Parameters	GroupI	GroupII	P value
Heartrate(bpm)	92.3	102.7	0.82
SystolicBP(mmHg)	134.2	138.4	0.91
DiastolicBP(mmHg)	87.5	88.2	0.52
MAP(mmHg)	102.6	104.6	0.91
SPO2(%)	98.2	98.4	0.78

Table III shows that mean heart rate was 92.3 and 102.7, SBP (mm Hg) was 134.2 and 138.4, DBP (mm Hg) was 87.5 and 88.2, MAP was 102.6 and 104.6 and SPO2(%) was 98.2 and 98.4 in group I and II respectively. The difference was non- significant (P> 0.05).

DISCUSSION

Electro convulsive therapy (ECT) is used to treat depression in the patients not responding to antidepressant therapy. ECT may be associated with untoward consequences such as hypotension and bradycardia followed by hypertension and tachycardia. After awakening, patient may experience confusion, agitation, headache, and muscle stiffness.[7]Most ECT procedures are carried out with muscle paralysis under general anesthesia. Therapeutic adequacy of ECT can be determined by monitoring the seizure duration which can be done by either with electroencephalogram or by observation of motor seizure.[8]

The purpose of anesthesia during ECT is to induce an unconscious state, and the agents used should not impact motor seizure. Thus, the type of anesthetic agents used in modified ECT becomes very important as all anesthetic agents have some seizure modifying properties.[9] The present study was conducted to compare Ketofol and Propofolfor electroconvulsive therapy.

We observed that motor seizure duration (sec) was 24.5 in group I and 30.4 in group II, time of spontaneous breathing (sec) was 322.1 in group I and 290.2 in group II, time of spontaneous eye-opening (sec) was 545.8 in group I and 504.8 in group II and time of obeying commands (sec) was 710.3 in group I and 725.2 in group II. Erdogan et al[10]found that motorseizureduration inKetofolwas29±17seconds and Propofol was 28±13 seconds with no statisticalsignificancebetweentwogroupsbutmotorseizureduration was adequate in either group.

We found that at baseline, mean heart rate (bpm) was 86.5 and 87.2, systolic BP (mmHg) was 120. 4 and 125.5, diastolic BP (mmHg) was 80.2 and 78.0, MAP (mmHg) was 96.4 and 91.3 and SPO2 (%) was 98.2 and 98.1 in group I and II respectively. Hashemet al[11] in their study observed higher seizure duration in thiopentone group compared to propofol group (P = 0.001). Use of higher dose of propofol and lower dose of thiopentone in their study might have contributed to their observation.

We found that mean heart rate was 92.3 and 102.7, SBP (mm Hg) was 134.2 and 138.4, DBP (mm Hg) was 87.5 and 88.2, MAP was 102.6 and 104.6 and SPO2(%) was 98.2 and 98.4 in group I and II respectively. Mir et al[13] compared thiopentone, propofol, and etomidate as induction agents for ECT. Their study showed a rise in SBP after delivery of shock till 2 min and after 2 min there was a decreasing trend. The variability was statistically significant in thiopentone group. Propofol group showed less rise compared to baseline.Butter field *e*t al[14] in their study observed that cognitive impairment in the early recovery period after ECT are reduced with propofol compared to thiopental anesthesia.

The limitation the study is small sample size.

CONCLUSION

Authors found that there was no difference in recovery parameters. Both Ketofol and Propofol produced adequate motor seizure duration.

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