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A RETROSPECTIVE COMPARATIVE STUDY OF ETOMIDATE AND PROPOFOL AS INDUCTION AGENT IN RAPID SEQUENCE INTUBATION IN EMERGENCY MEDICINE DEPARTMENT

Emergency Medicine

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ABSTRACT

OBJECTIVE: Compare the efficacy and safety of Etomidate and propofol in rapid sequence intubation and to study the incidence of adverse effects of these drugs.

METHODS: Retrospective study will be conducted at tertiary care centre in Navi Mumbai from which data of patients who underwent Rapid sequence intubation will be taken and analysed.

RESULTS: Efficacy of etomidate and propofol were comparable.Propofol had higher incidence of hypotension when compared to etomidate but percentage of those patients requiring interventions for the hypotension was less when compared to patients who developed hypotension after etomidate.

CONCLUSION: Further research required to choose an ideal induction agent in rapid sequence intubation till then it appears to be fair to use etomidate in hemodynamically unstable patients over propofol and in hemodynamically stable patients to choose induction agent on a case to case basis.

KEYWORDS

INTRODUCTION

Rapid sequence intubation has revolutionised emergency airway management and includes the almost simultaneous administration of induction agent and neuro muscular blocking agent.The purpose is to facilitate securing an effective airway with minimal side effects.For this purpose an ideal induction agent should provide hemodynamic stability and minimal respiratory side effects and optimal intubating conditions. It is important to emphasize that induction with sedation agents must occur before paralyzing patients to avoid consciousness during the procedure.

Etomidate is an imidazole derivative with rapid onset,rapid action And peak activity and brief duration of action and is hemodynamically stable. Side effects include myoclonus and rare Instances of blunting of adrenal response to adrenocorticotrophic Hormone (ACTH) and reducing serum cortisol levels transiently(Data is still controversial).

Propofol is a highly lipophilic alkylphenol with gamma-ammino butyric acid (GABA) receptor stimulation activity.It has a relatively rapid onset and brief duration of activity. It reduces Intra cranial pressure (ICP) and cerebral oxygen usage hence is an optimal choice in hemodynamically stable patients with traumatic brain injuries and reactive airway disease because it does not affect cerebral perfusion and can assist in bronchodilation. Adverse effects include decrease in blood pressure, bradycardia, Pain at injection sites, thrombophlebitis, anaphylaxis and myoclonus.

In this study we attempt to compare the efficacy and safety of these drugs to select the ideal induction agent.

AIMS AND OBJECTIVES:

1. Compare the efficacy and safety of Etomidate and propofol in rapid sequence intubation..
2. To study the incidence of adverse effects of these drugs.

INCLUSION AND EXCLUSION CRITERIA:

INCLUSION CRITERIA

- All patients who underwent rapid sequence intubation in the ED >18 years of age.

EXCLUSION CRITERIA

- Patients with predictors of difficult intubation.

MATERIALS AND METHODS:

STUDY DESIGN: Retrospective study

STUDY SITE: Study conducted in the department of Emergency medicine, DY Patil hospital, Navi Mumbai

STUDY POPULATION: Patients who underwent rapid sequence intubation in the emergency department.

STUDY DURATION: 6 months

SAMPLE SIZE: 50

STUDY PROCEDURE:

Data collection was collected retrospectively of 25 patients who received a single dose of etomidate and 25 patients who recieved propofol prior to intubation .Information collected included; age, sex, and past medical history, indication for intubation, RSI medication used,need for vasopressors or intravenous fluids. Procedure duration , complications were obtained from hospital procedural documents in the chart. Vital signs monitored in the ED included blood pressure, heart rate, mean arterial pressure, respiratory rate, temperature, pulse oximetry and oxygenation requirements.These Measurements were collected at ED admission,prior to intubation and 30 mins after completing intubation.Procedure duration was defined as ≤5 minutes or >5 minutes to completion of the intubation.With a procedural time <5 mins indicating good efficacy and >5 minutes indicating bad efficacy.Main Side effect of hypotension within 30 mins of induction agent administration. Hypotension was defined as a systolic blood pressure < 90 mmHg or a diastolic blood pressure < 60 mmHg.Incidence of information of any other side effect like myoclonus,anaphylaxis was collected and analysed.

RESULTS:

In this study a records of 50 patients were included ,they were grouped into two groups.Group A had 25 patients with etomidate as their induction agent and Group B had propofol as their induction agent.

We found that out of the 25 patients in Group A ,21 of them had a procedure time less than 5mins.In Group B 22 patients had a procedure time of less than 5 minutes.

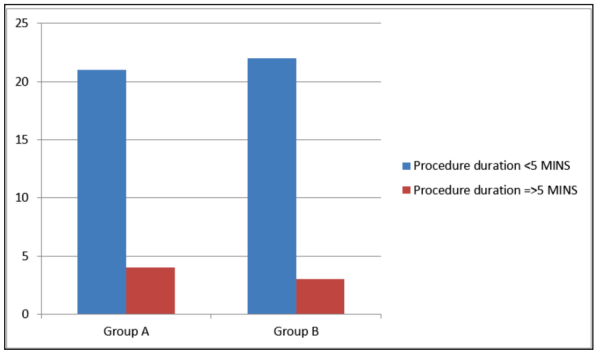

Figure 1

Out of 25 patients in Group A only 4 patients developed hypotension and 3 of them required intervention for hypotension.

In Group B out of the 25 patients 9 patients developed hypotension,with 6 of them requiring intervention for hypotension.

Other side effects were minimal in both groups.

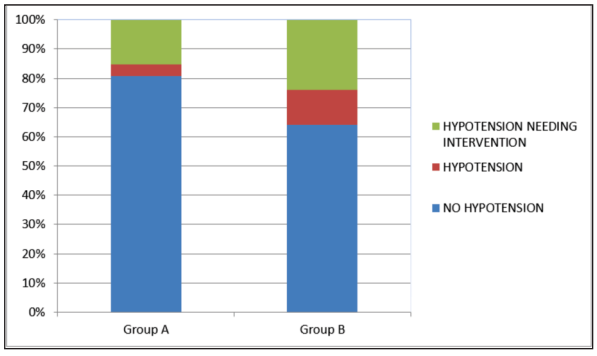

Figure 2

CONCLUSION :

In this retrospective study comparing propofol and etomidate for induction during RSI, we found that both agents have similar efficacy if procedure time is taken as a determinate of the same.Assuming that an induction agent with better efficacy would provide suitable intubation conditions and rapid onset and brief duration of action which would reduce the procedure duration.

When rate of hypotension was compared was compared propofol had a higher incidence of hypotension compared to etomidate.However in patients who developed hypotension patients who were given etomidate the percentage of patients who required interventions for their hyptension were more.However this could be due to the fact that presently etomidate is being used more in patients with worser severity of illness. Further research is required to choose an ideal induction agent in rapid sequence intubation till then it appears to be fair to use etomidate in hemodynamically unstable patients over propofol and to choose the induction agent on a case to case basis in hemodynamically stable patients.

Limitations

- Being a Retrospective study a lot of confounding variables could not be accounted for.
- Small size of the study.

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