Evaluation of Various Factors Affecting Emergency Intubation

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Abstract

Background: Inadequate airway management is a major contributor to pre-hospital morbidity and mortality. The present study was conducted to evaluate various factors affecting endotracheal intubation. Subjects and Methods: This study was conducted on 474 patients requiring ETI. Informed consent was obtained from family members of all patients. Emergency intubation was performed as a ‘rapid sequence induction’ (RSI), with preoxygenation and cricoid pressure followed by an induction agent and then suxamethonium. Factors affecting ETI was recorded. Results: Out of 476 patients, males were 280 and females were 196. Indication of RTI was low GCS seen in 64, injury in 320, respiratory insufficiency in 10 and cardiac arrest in 82. The difference was significant (P< 0.05). Method of ETI was RSI in 290, without relaxant in 81 and without any medication in 105. The difference was significant (P<0.05). Common difficulties in ETI were blood seen in 30%, vomit in 14%, hypersalivation in 28%, anatomical difficulties in 7%, patient position in 10% and technical problems in 11%. The difference was significant (P<0.05). Conclusion: The presence of blood, vomit, hypersalivation, anatomical difficulties, patient position and technical problems are among various factors affecting ETI.

Keywords: Airway management, Endotracheal intubation, technical.

Introduction

Inadequate airway management is a major contributor to pre-hospital morbidity and mortality. Several studies examining pre-hospital deaths from trauma in the UK have shown that airway obstruction was thought to have contributed to death from major trauma in up to 85% of patients. On the other hand, several studies have shown that trauma patients may profit from a definitive airway control by pre-hospital endotracheal intubation (ETI).[1] Endotracheal intubation (ETI) is a rapid, simple, safe and non surgical technique that achieves all the goals of airway management such as maintains airway patency, protects the lungs from aspiration and permits leak free ventilation during mechanical ventilation, and remains the gold standard procedure for airway management.[2] When ETI is difficult or has failed both elective airway management as well as emergency airway management are alternatives to ETI.[3] The knowledge, technical skills and crisis management capabilities of the anesthesiologists play a vital role in the occurrence and outcome of complications during airway management. A hurried intubation, without adequate evaluation of the airway or preparation of the patient or the equipment is more likely to cause damage.[4] Devices such as laryngeal mask airway and the combitube may be used. Both ETI and the use of the other airways are associated with complications, some of them life threatening. It is essential for anesthesiologists to be aware of these complications, and to have an effective strategy to prevent and manage these complications when they arise.[5] The present study was conducted to evaluate various factors affecting endotracheal intubation.

Subjects and Methods

This study was conducted in the department of Anaesthesiology. It comprised of 474 patients requiring ETI. Informed consent was obtained from family members of all patients.

Data pertaining to patient was recorded in case history performa. Emergency intubation was performed as a ‘rapid sequence induction’ (RSI), with preoxygenation and cricoid pressure followed by an induction agent and then suxamethonium. Patients with cardiac arrest and patients with glasgow-Coma-Scale 3 were intubated without any medication. Factors affecting ETI was recorded. Results were tabulated and subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table 1: Distribution of patients

| Gender | No. | Total- 476 |
|--------|-----|------------|
| Males  | 280 |            |
| Females| 196 |            |
Table 2: Indication and method of ETI

| Indication of ETI | Number | P value |
|------------------|--------|---------|
| Low GCS          | 64     | 0.01    |
| Pattern of injury| 320    |         |
| Respiratory insufficiency | 10     |         |
| Cardiac arrest   | 82     |         |
| Method of ETI    |        |         |
| RSI              | 290    | 0.02    |
| Without relaxant | 81     |         |
| Without any medications | 105 |         |

[Table 2] shows that indication of RTI was low GCS seen in 64, injury in 320, respiratory insufficiency in 10 and cardiac arrest in 82. The difference was significant (P<0.05). Method of ETI was RSI in 290, without relaxant in 81 and without any medication in 105. The difference was significant (P<0.05).

**Discussion**

Pre-hospital airway management is more difficult because of a number of factors, such as limited equipment and monitoring, lack of skilled help, blood, vomit and debris in the upper airway, inadequate lighting, excessive noise and impaired patient access.[5] Therefore, pre-hospital airway management is difficult, even for anesthetists with extensive experience in airway management. The present study was conducted to evaluate various factors affecting endotracheal intubation.

In present study, out of 476 patients, males were 280 and females were 196. This is in agreement with Karch et al.[6]

![Figure 1: Difficulty in ETI in patients](image)

[Figure 1] shows that common difficulties in ETI were blood seen in 30%, vomit in 14%, hypersalivation in 28%, anatomical difficulties in 7%, patient position in 10% and technical problems in 11%. The difference was significant (P<0.05).

**Conclusion**

Authors found that presence of blood, vomit, hypersalivation, anatomical difficulties, patient position and technical problems are among various factors affecting ETI.

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