Faculty of medicine

The Use of Ketofol versus Propofol for Sedation of Patients Undergoing Upper Gastrointestinal Endoscopies

Thesis

Submitted for Partial Fulfillment of Master Degree in Anesthesiology

By

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2017

ABSTRACT

Introduction: The provision of sedation and analgesia always has been a critical component of performing endoscopic procedures on the gastrointestinal (GI) tract. The procedures create some pain and discomfort and are associated with anxiety for the patient. Comfort is paramount, but patient cooperation also is critical to the success of the examination.

Aim of the Work: To determine whether the use of ketofol instead of propofol results in fewer adverse respiratory events requiring physician intervention when used for procedural sedation and analgesia.

Methodology: After obtaining approval from the medical ethical committee in Ain shams university, this study will be conducted in Ain shams university hospital. It will include patients aged 18 to 60 years undergoing upper gastrointestinal endoscopy. A written informed consent will be obtained from every patient after explaining the procedure.

Results: The study was performed upon 94 patients, aging 18-60 years, and were divided into two groups. Group P: 47 patients who received propofol. Group KP: 47 patients who received ketofol.

Conclusion: This study conclude that ketofol is a good choice to provide safe and effective sedation and analgesia for patients undergoing upper GI endoscopy as it results in less adverse respiratory events requiring intervention and provides a better hemodynamic stability. It also results in similar frequency of postoperative nausea, vomiting and delirium.

Keywords: Ketofol versus Propofol, Patients Undergoing, Gastrointestinal Endoscopies

Acknowledgement

First of all, *thanks are all to* ***ALLAH,*** *the most merciful, for supporting me all through my life.*

I would like to express my deepest gratitude to ***Prof. Reem Hamdy El Kabarity,*** *Professor of anesthesia and Intensive Care, Faculty of medicine, Ain Shams University. I feel highly honored by having the chance to work under her supervision. I had the privilege to benefit from her great knowledge.*

I am also very grateful to ***Dr. Ramy Mounir Wahba,*** *Lecturer of Anesthesia and Intensive Care, Faculty of Medicine, Ain Shams University, and* ***Dr. Doaa Mohammed Kamal El-Din****, Lecturer of Anesthesia and Intensive Care, Faculty of Medicine, Ain Shams University, for their close supervision, fruitful advices, and the great effort they have done throughout the whole work.*

No words could express my deep appreciation to my colleagues and my family for their great support and guidance.

Omar Sayed Osman

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List of abbreviations

- **ABP** : Arterial bood pressure
- **ASA** : American society of anesthesiology
- **AVN** : Atrioventricular node
- **Ca** : Calcium
- **CBF** : Cerebral blood flow
- **CMRO2** : Cerebral metabolic rate for oxygen
- **CNS** : Central nervous system
- **CO2** : Carbon dioxide
- **COP** : Cardiac output
- **CVS** : Cardiovascular system
- **DBP** : Diastolic blood pressure
- **ECG** : Electrocardiogram
- **EEG** : Electroencephalogram
- **EGD** : Esophagogastroduodenoscopy
- **EMR** : Endoscopic mucosal resection
- **EN** : Enteral nutrition
- **ERCP** : Endoscopic retrograde cholangio pancreatography
- **ESD** : Endoscopic submucosal dissection
- **ETT** : Endotracheal tube

- **EUS-FNA** : Endoscopic ultrasound guided fine needle aspiration
- **GA** : General anesthesia
- **GABA** : gamma amino butyric acid
- **GERD** : Gastroesophageal reflux disease
- **GIT** : gastrointestinal tract
- **ICP** : Intracranial pressure
- **ICU** : Intensive care unit
- **IM** : Intramuscular
- **IV** : Intravenous
- **LES** : Lower esophageal sphincter
- **MAS** : Modified Alderete Score
- **MBP** : Mean blood pressure
- **N2O** : Nitrous oxide
- **NMDA** : N-methyl D-aspartate
- **NSAIDs** : Non steroidal anti-inflamatory drugs
- **O2** : Oxygen
- **PaCO2** : Arterial partial pressure of carbon dioxide
- **PACU** : Post operative care unit
- **PEG** : Percutaneous endoscopic gastrostomy
- **PONV** : Post-operative nausea & vomiting

- **PUD** : peptic ulcer disease
- **P-value** : Probabilty value
- **SAN** : Sinoatrial node
- **SBP** : Systolic blood pressure
- **SO2** : Peripheral oxygen saturation
- **SPSS** : Statistical Program for Social Science
- **T10** : Tenth thoracic vertebra
- **TIPS** : Transjugular Intrahepatic Portosystemic Shunt
- **Vd** : Volume of distribution
- **WPW** : Wolf Parkinson White syndrome
- **X2 test** : Chi-square

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INTRODUCTION

The provision of sedation and analgesia always has been a critical component of performing endoscopic procedures on the gastrointestinal (GI) tract. The procedures create some pain and discomfort and are associated with anxiety for the patient. Comfort is paramount, but patient cooperation also is critical to the success of the examination ***(Cohen et. al., 2006).***

In the early days of endoscopy, it was routine practice for the sedation and analgesia to be provided by the endoscopist. In the current environment, everything is changing. The demand for endoscopy, especially screening colonoscopies, has increased dramatically. More stimulating and complex procedures that can be accomplished with the endoscope are emerging. New medications for sedation and analgesia are either under investigation or already are on the market. Standards for monitoring and criteria for discharge are improving. Because of these changes, anesthesiologists have become involved in the care of many of these patients. In some situations, endoscopists may not want to divide their attention between performing the procedure and maintaining the sedation. In other situations, there may be a need for more sophisticated medications that require the expertise of an anesthesiologist. Occasionally, the need for sedation is escalated, sometimes to the point of requiring general anesthesia, because of the complexity of the procedure. Last, these procedures also are becoming common in children, whose cooperation may be gained only with the administration of general anesthesia ***(Cohen et. al., 2006).***

Propofol is a commonly used agent for daily anesthesia procedures as it has early-onset effect with single dose and a short half-life. Yet it has some serious side effects like hypotension, bradycardia, and respiratory depression ***(Arora, 2008).***

Ketamine is an amnestic and analgesic agent that binds to N-methyl D-Aspartate (NMDA) receptors. Due to low cardiovascular side effect profile, ketamine is widely used as a combination agent in anesthetic procedures. However, it might delay postoperative recovery ***(Ozgul et. al., 2013).***

It has been demonstrated that ketofol is effective for procedural sedation and analgesia, and it has been hypothesized that its use results in fewer adverse events during sedation than when propofol is used alone, as a result of a lower overall dose of each drug. Despite these theoretical advantages of ketofol, previous single-center randomized controlled trials have not shown a reduction in respiratory adverse events ***(Andolfatto et. al., 2012).***

Aim Of The Work

To determine whether the use of ketofol instead of propofol results in fewer adverse respiratory events requiring physician intervention when used for procedural sedation and analgesia.

Overview of The Upper Gastrointestinal Tract Anatomy And Physiology

Mouth:

The mouth is the first part of the gastrointestinal tract and is equipped with several structures that begin the first processes of digestion. These include salivary glands, teeth and the tongue. The mouth consists of two regions, the vestibule and the oral cavity proper. The vestibule is the area between the teeth, lips and cheeks and the rest is the oral cavity proper. Most of the oral cavity is lined with oral mucosa, a mucous membrane that produces a lubricating mucus, of which only a small amount is needed. Mucous membranes vary in structure in the different regions of the body but they all produce a lubricating mucus, which is either secreted by surface cells or more usually by underlying glands. The mucous membrane in the mouth continues as the thin mucosa which lines the bases of the teeth. The main component of mucus is a glycoprotein called mucin and the type secreted varies according to the region involved. Mucin is viscous, clear, and clinging. Underlying the mucous membrane in the mouth is a thin layer of smooth muscle tissue and the loose connection to the membrane gives it its great elasticity. It covers the cheeks, inner surfaces of the lips, and floor of the mouth ***(Fagarasan et. al.,2003).***

Oral cavity

There are three pairs of main salivary glands and between 800 and 1,000 minor salivary glands, all of which mainly serve the digestive process, and also play an important role in the maintenance of dental health and general mouth lubrication, without which speech would be impossible. The main glands are all exocrine glands, secreting via ducts. All of these glands terminate in the mouth. The largest of these are the parotid glands—their secretion is mainly serous. The next pair are underneath the jaw, the submandibular glands, these produce both serous fluid and mucus. The serous fluid is produced by serous glands in these salivary glands which also produce lingual lipase. They produce about 70% of the oral cavity saliva. The third pair are the sublingual glands located underneath the tongue and their secretion is mainly mucous with a small percentage of saliva ***(Fagarasan et. al.,2003).***

Within the oral mucosa (a mucous membrane) lining the mouth and also on the tongue and palates and mouth floor, are the minor salivary glands; their secretions are