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ANALYSIS OF KETAMINE EFFICACY DURING ENDOSCOPY IN ADULT PATIENTS

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Abstract:

The use of upper gastrointestinal endoscopy (UGE) for diagnosis and treatment is becoming increasingly more frequent in children. Unlike adults, children require deep sedation. The effects of ketamine, one of the most commonly used agents in UGE of children, are rapid, but short; ketamine offers quick recovery and has wide confidence intervals. The basic aim of this review is to explain the Ketamine efficacy during endoscopy in adult patients. Ketamine is a general anaesthetic agent widely used for paediatric procedural sedation outside the operating theatre by non-anesthesiologists. It is considered a dissociative anaesthetic. Endoscopy is the most accurate and beneficial way for the diagnosis of dyspepsia, peptic ulcers, and malignancies. Sedative drugs are used for both patient and physician satisfaction during the procedure; type of endoscopy, duration, degree of difficulty, and patients' physical status are the criteria which determine the suitable type of sedation for endoscopy. It is concluded from the literature and previously published data low-dose oral administration of ketamine could make a suitable sedation for gastro-enteric endoscopy.

Key words: *Gastro, Endoscopy, Diagnosis, Ketamine*

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INTRODUCTION

The use of upper gastrointestinal endoscopy (UGE) for diagnosis and treatment is becoming increasingly more frequent in children. Unlike adults, children require deep sedation. It is difficult to adjust the depth of anaesthesia in invasive procedures outside the operating room. Although target-controlled infusion (TCI) or total intravenous anaesthesia (TIVA) infusion pumps enable rapid adjustments in sedation level, optimal conditions may not be available everywhere or every time[1]. Although superficial anaesthesia in children prevents successful performance, very deep anaesthesia or sedation may cause respiratory depression and other related side effects. A large number of sedatives and anaesthetic drugs are used in the UGE process in children[2]. The most commonly used drugs are ketamine, propofol, midazolam and fentanyl.

The effects of ketamine, one of the most commonly used agents in UGE of children, are rapid, but short; ketamine offers quick recovery and has wide confidence intervals. When used for sedation and anaesthesia, ketamine causes dissociative anaesthesia characterized by amnesia and analgesia[3]. However, side effects such as aspiration, stridor, laryngospasm and after-sedation nausea have been reported. In addition, there may be some effects called emergence reactions such as nightmares, delirium, excitation and physical aggression. Ketamine is used in combination with benzodiazepines (especially midazolam) to reduce the frequency of these side effects[4]. Midazolam is a very short-acting benzodiazepine. It has sedative, hypnotic, anxiolytic and anticonvulsant properties and causes anterograde amnesia.

Although gastrointestinal endoscopy is widely accepted as fundamental to the diagnosis and treatment of digestive disorders in children, considerable controversy and practice differences persist with respect to the methods and agents used to achieve optimal endoscopic sedation[5]. Sedation must have a rapid onset, short duration of action, and should be safely administered by a non-anesthesiologist without significantly increased the risk of potential complications[6].

Theoretical background

Ketamine is a general anaesthetic agent widely used for paediatric procedural sedation outside the operating theatre by non-anesthesiologists. It is considered a dissociative anaesthetic. This means that the drug distorts the user's perception of sight and sound and produces feelings of detachment from the environment and one's self. Ketamine has found many applications in paediatric anaesthetic practice[7]. Insights into the mechanism of action and the pharmacokinetics and pharmacodynamics of its isomers have led to a re-evaluation of this drug, expanding the range of applications in children. Ketamine is a remarkably versatile drug that can be administered through almost any route. It can also be used for different purposes[8].

Objectives of the study

The basic aim of this review is to explain the Ketamine efficacy during endoscopy in adult patients.

MATERIAL AND METHODS:

This descriptive study was conducted in Benazir Bhutto Hospital, Rawalpindi during August 2018 to January 2019.

Ketamine efficacy in adults during endoscopy

Endoscopy is the most accurate and beneficial way for the diagnosis of dyspepsia, peptic ulcers, and malignancies. Sedative drugs are used for both patient and physician satisfaction during the procedure; type of endoscopy, duration, degree of difficulty, and patients' physical status are the criteria which determine the suitable type of sedation for endoscopy. Although there are several drugs and techniques for the induction of sedation and reduction of pain during gastro-enteric endoscopies, there is no standardized method of sedation, and physicians themselves choose the best method regarding their experience[12].

Benzodiazepines are mostly used for the goal of sedation, and among them, midazolam is the drug of choice. Opioids (including pethidine and fentanyl), propofol, ketamine, and droperidol are other sedative drugs used for the same purpose. Ketamine could be used as a substitute of opioids and benzodiazepines for sedation during endoscopy with a wide spectrum effects on pain, amnesia, anesthesia, and sedation which can be administered intravenous, intramuscular, or even oral and rectal. Dose of 0.2-0.5 mg/body weight (Kg) is usually used for reduction of pain and after 10-15 min, the full consciousness is returned[13]. Delusion, auditory and visual hallucinations, and other side effects which may occurred in a period of 24 h after ketamine administration make some limitations for drug usage[14]. A potential contractive effect on laryngeal muscles in unwell patients also would lead to significantly unpredictable decrease in blood pressure and cardiac output. Previous studies had worked on the combination of ketamine and midazolam for the induction of sedation in pediatric gastro-enteric endoscopy but there is no similar study on adults[15].

In some areas of the world, ketamine is mostly used in sedation for endoscopy for all ages due to lack of other medications. Ketamine is also used for the reduction of neuropathic pains such as post herpetic neuralgia, complex regional pain syndrome, malignancy, orofacial pain, and limb phantom pain[16].

DISCUSSION:

Singh et al. comparing propofol alone and in combination with ketamine or fentanyl for sedation during endoscopic ultrasonography. The combination of propofol and ketamine is used to confer advantages such as hemodynamic stability, analgesia, a lower incidence of respiratory depression, and faster recovery. The authors suggest the use of 50 µg fentanyl or 0.5 mg/kg ketamine in a single dose during endoscopic ultrasonography to reduce the dose of propofol required for sedation during the procedure. The dose of propofol administered was significantly higher in the propofol only group than in patients who received either fentanyl or ketamine as an adjuvant[9]. However, in contrast to fentanyl, the use of ketamine prolonged the time to recovery ($P < 0.001$). The ketamine-propofol combination, also called ketofol, has been used for procedural sedation in several studies in varying ratios.

Wang et al. studied the use of the propofol-ketamine combination in varying ratios of 2 : 1, 3 : 1, and 4 : 1 and compared it with the propofol-fentanyl combination and propofol alone. They found that ketofol was as safe and effective as the propofol-fentanyl combination. The level of sedation and recovery based on discharge times for the 3: 1 and 4: 1 mixtures of ketofol were comparable to those for the combination of propofol with fentanyl 50 µg and propofol alone[10]. The incidence of respiratory depression and post procedural drowsiness was lower with a 4: 1 ratio (160 mg propofol and 40 mg ketamine) than with other ratios of ketofol. In another study, Gorji et al. evaluated combinations of propofol with ketamine and fentanyl for endoscopic retrograde cholangio-pancreatography[11].

There are several studies worked on the effect of ketamine on pain reduction and most of them are focused on the intravenous injection of ketamine and its effect on some special pains such as neuropathic pains. Moharari *et al*. found that injection of 10 cc lidocaine plus 2 cc of ketamine into the urethra can significantly decrease pain during cystoscopy, especially in the first 5 min of the procedure1[7]. Another study designed to find a suitable sedative method for pediatric gastro-enteric endoscopy revealed that combination of oral ketamine with intravenous injection of midazolam is a perfect way to decrease pain and induction of sedation; however, further episodes of vomiting were reported due to oral administration of ketamine. Khademi *et al*. in a 2011 study on 78 pediatric patients showed that peri-tonsillar infiltration of ketamine (0.5 mg/kg) leads to reduced pain and postsurgery vomiting after adenotonsillectomy[17].

CONCLUSION:

It is concluded from the literature and previously published data low-dose oral administration of ketamine could make a suitable sedation for gastro-enteric endoscopy.

REFERENCES:

1. Paspatis GA, Manolaraki MM, Tribonias G, Theodoropoulou A, Vardas E, Konstantinidis K, et al. Endoscopic sedation in Greece: Results from a nationwide survey for the Hellenic Foundation of gastroenterology and nutrition. Dig Liver Dis. 2009;41:807–11.
2. Cohen LB, Wecsler JS, Gaetano JN, Benson AA, Miller KM, Durkalski V, et al. Endoscopic sedation in the United States: Results from a nationwide survey. Am J Gastroenterol. 2006;101:967–74.
3. Riphaus A, Rabofski M, Wehrmann T. Endoscopic sedation and monitoring practice in Germany: Results from the first nationwide survey. Z Gastroenterol. 2010;48:392–7.
4. Baudet JS, Borque P, Borja E, Alarcón-Fernández O, Sánchez-del-Río A, Campo R, et al. Use of sedation in gastrointestinal endoscopy: A nationwide survey in Spain. Eur J Gastroenterol Hepatol. 2009;21:882–8.
5. Heuss LT, Froehlich F, Beglinger C. Changing patterns of sedation and monitoring practice during endoscopy: Results of a nationwide survey in Switzerland. Endoscopy. 2005;37:161–6.
6. London: British Society of Gastroenterology; 2003. Safety and Sedation during Endoscopic Procedures.
7. Byrne MF, Chiba N, Singh H, Sadowski DC. Clinical Affairs Committee of the Canadian Association of Gastroenterology. Propofol use for sedation during endoscopy in adults: A Canadian Association of Gastroenterology position statement. Can J Gastroenterol. 2008;22:457–9.
8. Gillman PK. Monoamine oxidase inhibitors, opioid analgesics and serotonin toxicity. Br J Anaesth. 2005;95:434–41.
9. Gilger MA, Spearman RS, Dietrich CL, Spearman G, Wilsey MJ, Jr, Zayat MN. Safety and effectiveness of ketamine as a sedative agent for pediatric GI endoscopy. Gastrointest Endosc. 2004;59:659–63.
10. Amornyotin S, Chalayonnawin W, Kongphlay S. Clinical efficacy of the combination of Propofol and ketamine versus propofol alone for deep sedation for colonoscopy. Eur J Anaesthesiol. 2011;28:30
11. Moharari RS, Najafi A, Khajavi MR, Moharari GS, Nikoobakht MR. Intraurethral instillation of ketamine for male rigid cystoscopy. J Endourol. 2010;24:2033–6.
12. Motamed F, Aminpour Y, Hashemian H, Soltani AE, Najafi M, Farahmand F. Midazolam-ketamine combination for moderate sedation in upper GI endoscopy. J

Pediatr Gastroenterol Nutr. 2012;54:422–6.[PubMed] [Google Scholar]
13. 17. Khademi S, Ghaffarpasand F, Heiran HR, Yavari MJ, Motazedian S, Dehghankhalili M. Intravenous and peritonsillar infiltration of ketamine for postoperative pain after adenotonsillectomy: A randomized placebo-controlled clinical trial. Med Princ Pract. 2011;20:43
14. Safavi M, Honarmand A, Nematollahy Z. Pre-incisional analgesia with intravenous or subcutaneous infiltration of ketamine reduces postoperative pain in patients after open cholecystectomy: A randomized, double-blind, placebo-controlled study. Pain Med. 2011;12:1418–26.
15. Akbulut UE, Cakir M. Efficacy and safety of low dose ketamine and midazolam combination for diagnostic upper gastrointestinal endoscopy in children. Pediatr Gastroenterol Hepatol Nutr 2015; 18:160–167.
16. Barbi E, Petaros P, Badina L, Pahor T, Giuseppin I, Biasotto E, et al. Deep sedation with propofol for upper gastrointestinal endoscopy in children, administered by specially trained pediatricians: a prospective case series with emphasis on side effects. Endoscopy 2006; 38:368–375.
17. Larsen R, Galloway D, Wadera S, Kjar D, Hardy D, Mirkes C, et al. Safety of propofol sedation for pediatric outpatient procedures. Clin Pediatr 2009; 48:819–823.