Ketofol for management of catheter related bladder discomfort. Our experience at Prince Hussein urological center

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Abstract: Our prospective, randomized and double blind study included 208 subjects, of both sexes, aged 27-49 years, classed I by the American society of anesthesiologists and assigned for different types of elective urological surgical procedures, having an 18 Fr Foleys catheter inserted intraoperatively, at Prince Hussein center, King Hussein medical center, Amman, Jordan, during the period Jan 2011-Jan 2013.Patients complaining of 0h postoperative catheter related bladder discomfort were divided into two groups. Group I (n=104) received intravenous Ketofol (mixture of ketamine 10mg (1ml) with propofol 10 mg (1ml) and group II (n=104) received intravenous 2ml normal saline. Catheter related bladder discomfort intensity was scored as mild, moderate and severe. Management was followed up at postoperative ½ and 1h intervals. Ketofol decreased significantly the intensity and frequency of catheter related bladder discomfort at ½ and 1 postoperative intervals ($P<0.05$).
Intravenous Ketofol (10 mg propofol with 10 mg ketamine) is a potent management for decreasing the intensity and frequency of postoperative catheter related bladder discomfort.

Keywords: : Aanesthesia: general, Ketofol; Catheter: Foley; Related bladder discomfort

1. Introduction

Perioperative urinary catheterization could induce catheter related bladder discomfort.Catheter related bladder discomfort is frequent in subjects after surgery with perioperative urinary catheterization.Ketamine alone in a dose of 250mcg/kg was demonstrated to be effective in the management of catheter related bladder discomfort(1).Muscarinic receptor antagonists showed potency in preventing catheter related bladder discomfort(2).

Procedural sedation and analgesia can be performed using multiple drugs but in the same time it should be safe and with fast emergence without side effects. Ketamine is a dissociative anesthetic that acts as a glutamatergic N methyl D aspartate antagonist. The dissociative sensation (the K hole) is pleasurable to some providing amnesia.Ketamine as a single agent for procedural sedation and analgesia in adults has been limited by the occurrence of emergence phenomena.Propofol is a nonopioid,nonbarbiturate,sedative-hypnotic agent with rapid onset and short duration of action.Propofol is known to be amnesic.(3).There is no published data in terms of ketofol administration in the postanesthesia care unit for management of catheter related bladder discomfort.

The aim of our investigation was to assess the potency of Ketofol in managing the postoperative catheter related bladder discomfort due to preoperative urinary catheterization.

2. Material and Methods

Our prospective and double blind investigation enrolled 208 adult patients, of both genders, aged 27-49years, classed I by the American society of anesthesiologists and scheduled for various short elective urological surgical interventions after obtaining written informed consent from all participants and approval from the local ethics committee of our royal medical services, at prince Hussein centre, King Hussein medical centre, Amman, Jordan, during a 2 years period from Jan 2011 to Jan 2013.

Intravenous general anesthesia was induced using fentanyl 3mcg/kg,sodium thiopentone 4mg/kg and cisatracurium 0.15mg/kg after which a laryngeal mask airway was placed through which a mixture of oxygen 30%,air 70% and 1MAC of isoflurane was administered. General anesthesia was maintained using oxygen 30%, air 70% and 0.5MAC of sevoflurane. Periopertive urinary catheterization was performed using an 18 Fr Foleys catheter with its balloon inflated with 10 ml distilled water, lubricated with K-Y gel, fixed with tape and left to free drainage. Monitoring included for heart rate, non-invasive blood pressure, SpO2 and end tidal CO2.At the end of surgery, neostigmine 0.05mg/kg with

atropine 0.15mg/kg were administered intravenously.Ketofol was prepared as a 1;1 combination of ketamine 10mg/ml and propofol 10mg/ml,mixed in a 10 ml syringe.Procedural sedation and analgesia using ketofol was done using titrated intravenous use of 1-3 ml ketofol.

Postoperatively in the recovery room at 0h all study subjects were divided randomly into two groups. Group I(n=104) received intravenous ketofol 2ml(propofol 10mg(1ml) and ketamine 10mg(1ml)) and group II(n=104) received 2ml normal saline, intravenously. Frequency (yes/no) and intensity of catheter related bladder discomfort were evaluated at ½ and 1h postoperatively and recorded as mild (reported by the patient only on asking), moderate (reported by the patient without asking) and severe (reported by the patient without asking and accompanied by behavioral responses).Behavioral responses were flailing limbs, strong vocal response and trials to remove the catheter (2).

Frequency and intensity of catheter related bladder discomfort were analyzed statistically using Chi-square test and student's t. test. P-value <0.05 was considered significant.

3. Results

There were no significant differences between the two groups in terms of number, age, ASA,sex and duration of surgery .P>0.05. (Table I). All patients complained of catheter related bladder discomfort at 0h in the post anesthesia care unit in both groups.P>0.05.Mild degree of catheter discomfort was reported in 99.1% in both groups at 0h postoperative interval.At ½ h postoperative interval, 99.1% in GII complained of catheter discomfort while 93.3 % complained of such affection.P<0.05.Moderate degree of catheter discomfort was found to be in 0% and 58.7% in groups Iand II, respectively, at 1h postoperative interval. P<0.05. Ketofol abolished the incidence of catheter related bladder discomfort at ½ h and 1h postoperative intervals while it was 14.4% and 7.7% at same previous intervals in group II.p<0.05.(Table II).All patients who were given ketofol needed only 2ml ketofol regardless of body weight and median recovery time was 7 minutes(range 3 to 10 minutes)

4. Discussions

There was a significant decrease in the frequency and intensity of catheter related bladder discomfort in subjects managed with Ketofol.

Postoperatively, subjects who received perioperative urinary catheterization with Foleys catheters suffer from catheter related bladder discomfort which is an urgent need to void or discomfort in the suprapubic area, similar to symptoms of overactive bladder. This discomfort is caused by involuntary contractions of bladder mediated by muscarinic receptors (2).

The urinary bladder is innervated by the cholinergic pelvic nerves and adrenergic hypogastric nerve. The urinary bladder shows different types of muscarinic receptors, predominantly M2 subtype receptor and less of M3 receptor. The M2 receptor stimulation leads to contraction of the detrusor smooth muscles. Selective M3 receptor unstimulation causes M2 stimulation of detrusor muscle (4).

Table 1.Patients characteristics (no, mean-range-).

		GI	GII
no		104	104
Age(years)		35(27-44)	39(30-49)
ASA	I	104	104
Sex	M	75	65
	F	29	39
Weight(kg)		83(79-89)	80(77-87)
Duration of surgery(min)		61(55-69)	67(63-71)

Table 2.Study results(no,%).

	ketofol			saline		
	0h	½ h	1h	0h	½ h	1h
No discomfort	0%	7(6.7%)	87(83.7%)	0%	1(0.9%)	9(8.7%)
Mild discomfort	1(0.9%)	96(92.3%)	17(16.3%)	1(0.9%)	19(18.3)	26(25%)
Moderate discomfort	90(86.5%)	1(0.9%)	0%	87(83.7%)	69(66.3%)	61(58.7%)
Severe discomfort	13(12.5%)	0%	0%	16(15.4%)	15(14.4%)	8(7.7%)

Ketofol is prepared by mixing 10 mg ketamine(1ml) with 10 mg propofol(1ml) and is administered intravenously postoperatively for sedation .Ketamine is a phenycyclidine derivative interacting with NMDA and non-NMDA glutamine receptors,mono-aminogenic ,opioid ,nicotinic and muscarinic cholinergic receptors(5).Ketamine may decrease the stimulation effect of the smooth muscles by an action on the central nervous system, the preganglionic fibres,the nicotinic receptors in the postsynaptic membrane of the intramural ganglion, the postsynaptic fibres,the muscarinic receptors, the chemical transmission between the receptors and the stimulated items or the stimulated items .Clinical reasonable concentration of ketamine may deeply depress muscarinic receptors(6).Ketamine has an immediate onset of action (within ½ min) with a maximum action within 1min.Subanesthetic analgesic action of ketamine is additive or synergistic with its anti-muscarinic action leading to reduction of

catheter discomfort. The ketamine sedation effect may reduce also the frequency of catheter discomfort.The use of ketamine in conjugation with propofol can decrease the dose of propofol needed to accomplish sedation and their complementary effects help the use of lower doses of each agent(7).Administration of ketamine and propofol has been demonstrated to be potent in the operating room(8).Propofol inhibits the psychomemetric effects of ketamine.Ketamine was used alone in treatment of this discomfort with 88% mild syptom at 1h postoperatively,decreasing to 16% at 2hpostoperatively.Severe symptom was recorded in 4% at 1h reducing to 0% at 2h postoperatively(1).

Ketofol must be compared with other agents to reduce the incidence of catheter related bladder discomfort in order to measure its potency.There is selection bias in our study because ketofol was administered at the request of the patients.

Intravenous Ketofol (10 mg ketamine with 10mg propofol) decreases the frequency and intensity of catheter related bladder discomfort in patients who had perioperative urinary catheterization for urological surgical procedures. Sub-hypnotic , sub-anesthetic and analgesic dose of ketofol is potent and safe in managing postoperative catheter related bladder discomfort.

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