Original article

Lidocaine versus Dexmedetomidine as an Adjuvant to General Anesthesia for Patients Undergoing Elective Abdominopelvic Surgeries

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ABSTRACT

Background: The fundamental impact of dexmedetomidine on the cardiovascular framework obstruction is the extra component of narcotic saving impact. Similarly, fundamental Lidocaine that is utilized as a consistent mixture during the operation period has pain-relieving, antihyperalgesic, and calming chattels.

Aim of the work: To analyze the effectiveness of lidocaine given intravenously with that of dexmedetomidine as an adjuvant to general anesthesia for candidates listed for elective abdominal and pelvic surgery.

Patients and Methods: 120 patients of both sexes undergoing elective pelviabdominal procedures were enlisted. Patients were assigned randomly to one of three equal groups: group 1 received a loading lidocaine 1.5 mg/kg, followed by an infusion of 2 mg/kg/h; group 2 received a loading dexmedetomidine1 μg/kg, followed by 0.5 μg/kg/h, and group 3 received normal saline 0.9% in the same design as previous medicines. Hemodynamics, consumption of anesthetic agents, induction and recovery times, and time to the first postoperative analgesic request were reported.

Results: The hemodynamics after intubation and in the next records, were significantly lower in groups 1 and 2 when compared with group 3 with no significant variance between groups 2 and 1. The induction dosage of propofol, mean end-tidal sevoflurane concentration and the consumption of fentanyl intraoperatively were significantly lower in group 2 when compared with group 1. The time through anesthesia induction was significantly lower in group 1 and 2 when compared with group 3. The time to the first analgesic demand postoperatively was significantly longer in group 2 when compared with group 1.

Conclusion: Both lidocaine and dexmedetomidine could be beneficial adjuvant to general anesthesia. Though, dexmedetomidine has a much economic effect on intraoperative anesthetic agent consumption and more extended time to the first postoperative analgesic request.

Keywords: Abdominopelvic surgeries; General Anesthesia; Dexmedetomidine; Lidocaine; Adjuvant.

* Main subject and any subcategories have been classified according to researchers' main field of study.

INTRODUCTION

The Issue of the financial burden and clinical bed inhabitance has been overwhelmed with laparo-scopic medical procedures.[1] Nonetheless, these focal points are not liberated from detriments, as hemodynamic changes, for example, hypertension, tachycardia and other surgical related problems, are generally watched during the surgical session. Dexmedetomidine, which is an imidazole composite, is the pharmacologically dynamic dextro-isomer of medetomidine that showcases explicit as well as discerning α2-adrenoceptor agonism.[2]

When the receptors are activated in the mind as well as the spinal cord restrains neuronal transmission, leading to hypotension, bradycardia, drowsiness, and numbness. The fundamental impact of dexmedetomidine on the cardiovascular framework obstruction is the extra component of narcotic saving impact. This medication has been regarded as a perfect adjuvant during general anesthesia, mainly when stress is normal to diminish the pulse.[3]

Consequently, fundamental vascular Lidocaine is the nearby sedative, which is utilized all the more regularly, and it is viewed as the model of amino-amide neighborhood sedatives. Similarly, Lidocaine that is utilized as a consistent mixture during the operative period has pain-relieving, antihyper-algesic, and calming chattels. They make it fit for lessening pre- and post-operative medication utilization and patients' clinic remain.[4]

AIM OF THE WORK

To analyze the effectiveness of lidocaine given intravenously with that of dexmedetomidine as an adjuvant to general anesthesia for candidates listed for elective abdominal and pelvic surgery.

Primary outcomes were: decreasing anesthetic requirements and extended time for first analgesic demand while the secondary outcome was the effect on the hemodynamics. Also, side effects were assessed.

PATIENTS AND METHODS

Approval from the investigation moral organization of Mustasharak Hospital, Khamis Mushyt, Kingdom of Saudi Arabia [KSA], and patients' signed educated approvals was obtained.

The contemporary casual, dual-unsighted, placebo-controlled research was carried on 120 patients of both sexes listed for electoral abdomen-pelvic procedures under general anesthesia in Mustasharak hospital within the time from April 2017 to August 2018.

Inclusion standards include candidates with age among 21 and 60 years with the American Society of Anesthesiologist (ASA) bodily situation I and II. Rejection measures involve candidates with a recognized sensitivity to either of the study medicines and candidates with heart, hepatobiliary or kidney comorbidities, and patients who are taking sedatives and antipsychotic drugs.

The loading, and continuous doses of lidocaine hydrochloride 2% (Sigma-Tec Pharmaceutical Industry Co., A.R.E.) and dexmedetomidine hydro-chloride (Precedex 200 μg/2 ml; Hospira, Inc., Rocky Mount, USA), were determined in consonance with the candidate's actual weight and mixed to a volume of 50 ml of normal saline 0.9%. The syringes of the research medicines were provided by an anesthetist who was blind to the case.

The operation's theater technician obtained the intravenous as well as the standard observing monitors that consisted of electrocardiography (EKG), surface oxygen saturation (SpO_2), Mean arterial blood pressure (MABP), and capnography were utilized.

The degree of anesthesia was checked utilizing a (BIS) Bispectral index (Aspect Medical System, MA, USA). When the BIS screen anodes were set on the membrane of the forehead in the wake of cleaning it with liquor and they were interconnected with the BIS Monitoring System. The profundity of the neuro-muscular bar was observed through electromyo-graphy (Relaxogram; Datex-Ohmeda Inc., Helsinki, Finland).

The ulnar nerve was invigorated on trans-cutaneous base at the left lower arm utilizing the train-of-four (TOF) method, and the power of withdrawal of adductor pollicis muscle was estimated as well as noted using a power removal transducer.

Additionally, the left lower arm was enclosed using a cover made from cotton to limit the loss of temperature. However, the patients were allotted arbitrarily by utilizing an automated platform for one of the three groups. Patients in the first group got a

stacking portion of intravenous lidocaine 1.5 mg per kg in 10 minutes trailed by an imbuement of 2 mg per kg every hour utilizing implantation siphon till 10 minutes before the procedure end.

Consequently, patients who were in the group 2, got 1 μg of a kg of intravenous dexmedetomidine in 10 mins, trailed by an intravenous infusion of 0.5 μg of kg per hour utilizing imbuement siphon for a similar period. Patients in group 3 were given 0.9% intravenous isotonic saline in the matching size and way as the investigation medications.

There was no pre-medication gotten thus 10 mg of metoclopramide was given gradually intravenously as a prophylactic antiemetic, all patients were pre-oxygenated with a hundred percent oxygen for three minutes. However, anesthesia was incited with an intravenous fentanyl 1 μg per kg (Martindale Pharmaceuticals, Romford, Essex RM3 8UG, UK.) trailed by propofol intravenously (Propofol 1%; Fresenius Kabi Deutschland GmbH Grazia) 10 mg augments every 5 seconds till the BIS arrived at an estimation of 60.

When the patient lost cognizance, atracurium 0.5 mg per kg was directed, and they were intubated with cuffed endotracheal tube 7.5 mm ID when whole single-jerk downheartedness (T1 = 0%) was acquired, and capnography was associated.

The patient's lungs stayed precisely aerated utilizing a Datex-Ohmeda Inc. anesthesia device (3030 Ohmeda Drive, Madison, WI, USA) appended to a shut circuit framework via a volume-measured manner: crisp gas stream (4 L/min), oxygen half air half, Tidal Volume (7–8 ml/kg), I: E proportion of 1:2, what's more, breathing frequency (13/min) to accomplish End-Tidal CO_2 of 30–35mmHg.

Anesthesia was kept up with sevoflurane titrated around 2 MAC pointing BIS in the objective scope of forty to sixty while muscle unwinding was given atracurium refill portions (0.1 mg per kg) directed with TOF check planning to keep up it as 1/4.

Patients in all the bunches got their surgical liquid prerequisites by normal saline solution 1.5 ml/kg/hr, third space misfortunes of around 5–6 ml/kg/hr. However, the remainder would be divided and administered as half in the first sixty minutes, 25% in the subsequent sixty minutes, and 25% in the third hour

Indicators of the deficient relief of pain were characterized as an expansion in heart rate (HR) and MABP surpassing 20% of pattern esteems.

At the same time, BIS inside the focused on extent was made do with extra doses of fentanyl intravenously 0.5 μg per kg. On the off chance that the MAP dipped under 60 mmHg, ephedrine 5 mg IV dose and liquid bolus were issued, which could be rehashed following 5 min whenever needed.

But Atropine 0.5 mg intravenous dose was administered if heart rate diminished to not more than 50 beats per minute.

The study medicates mixture was ended around 10 minutes before the surgical procedure ends. After the skin closure, sevoflurane was stopped, and a mix of intravenous atropine 0.02 mg/kg and neostigmine 0.05 mg per kg was served after the arrival of T1 = 25% or > 2 reactions on neuromuscular observing to invert the lingering neuromuscular bar.

At the point when BIS esteems arrived at 80, and TOF proportion (T4/T1) was 0.9, patient's trachea was extubated.

Later on, they were moved to the post-anesthesia care unit (PACU). Postoperative queasiness and heaving were treated with ondansetron 8 mg (Glaxo-Wellcome, Egypt) gradually intravenously.

Postoperative agony was managed by imbuement of paracetamol 1 g for 10 minutes. If the agony endured, the patients got pethidine 25 mg intravenously, which could be rehashed after fifteen minutes if postoperative torment persevered till torment got under control.

The following patient-related variables were reported in every group:

1. Hemodynamic measures :Baseline HR and MABP were reported, following the bolus of the investigation medication, after initiation of anesthesia, after intubation by 1 minute, interval of 15 minutes during the continuing of the surgery, following extubation, and immediately after reaching to PACU.

2. Consumption of anesthesia agents

a. The initial dosage of propofol is the total propofol dose that was given until reaching the BIS grade of 60.

b. The sevoflurane end-tidal gathering was reported every 15 minutes during the anesthesia time, and the mean rates throughout this time were collected for data analysis.

c. The total requirement of fentanyl intraoperatively.

Reporting done for the following times:

a. The time of anesthesia induction is the time from the propofol injection until approaching the BIS grade of 60.

b. The time of anesthesia recovery is the time from the stop of sevoflurane till reaching a BIS reading of 80.

c. The time of response is the time from the stop of sevoflurane until patients can react to verbal instructions.

d. The time to the first postoperative analgesic request.

Sample size and statistical analysis

Test size estimation was performed by utilizing the measurable programming Epi Info 2000 (CDC, Atlanta, USA) and the example size of 40 patients in each group was determined with an intensity of the trial of 80% and certainty interim of 95% as well as 5% alpha error.

The Information was gathered, organized, and afterward examined utilizing SPSS rendition16.0. (SPSS, Inc., Chicago, IL, USA).

Later on, numerical factors were displayed as mean or standard deviation while the examination of demographic factors between investigative bunches was executed by utilizing investigation of fluctuation test with Tukey's straightforward noteworthy contrast (HSD) post hoc test. However, the examination of straight out factors amongst study bunches was executed by chi-square or Fisher's rigorous test as suitable. P esteems under 0.05 were regarded as factually essential.

RESULTS

Regarding numerical input, there was no notable variation between the three groups regarding age, weight, ASA state, and duration of the procedure (Table 1).

Regarding MABP variations in the three groups,

the initial MABP was equivalent among all groups with no meaningful variation. After the initial dose of study medicines, the MABP declined in group 2 when compared with initial values to be significantly more inferior when compared with groups 3 and 1 with no significant variation between groups 3 and 1.

Following induction of anesthesia, the MABP declined in the three groups when matched with post drug initial dose readings to be significantly lower in groups 2 and 1 when matched with group 3 with no meaningful variation among groups 2 and 1.

One minute following intubation, the MABP raised in all groups when matched with readings following anesthesia induction to be significantly higher in group 3 when compared with groups 2 and group 1 with no significant variation between groups 2 and 1. In the following records, the MABP was significantly lower in groups 2 and 1 when matched with group 3 with no significant variation between groups 2 and 1 for the continuing of the procedural time.

Following extubation, the MABP raised in all groups to be significantly higher in group 3 when compared with groups 2 and 1 with no significant variation between groups 2 and 1. Upon patient transfer to PACU, the MABP declined in the three groups when compared with post-extubation readings to be significantly lower in group 2 and 1 when compared with group 3 with no significant variation between groups 2 and 1. (Table 2).

Hypotension was perceived in only 2 patients in group 3, 1 patient in group 1, and 1 patient in group 2 because of blood loss intraoperatively which immediately corrected by intravenous fluids and IV ephedrine supplements.

As regards HR changes, initial HR was similar among all groups with no meaningful variation. Following the initial dose of study medicines, HR decreased in group 2 when contrasted with initial readings to be significantly lower when correlated with groups 3 and 1 with no significant variation between groups 3 and 1.

Following initiation of anesthesia, HR declined in all groups when correlated with readings following initial drug dose to be significantly lower in groups 2 and 1 when correlated with group 3 with no significant variation between groups 2 and 1. Followed by 1 minute, the HR raised in all groups when contrasted with readings following induction of

anesthesia to be significantly higher in group 3 when correlated with groups 2 and 1 with no significant variation among groups 2 and 1.

In the consequent records, the HR was significantly lower in groups 2 and 1 when correlated with group 3 with no significant variation between groups 2 and 1 for the continuing of the procedural time.

Following extubation, the HR raised in all groups to be significantly higher in group 3 when correlated with groups 2 and 1 with no significant variation between groups 2 and 1.

At entrance time to PACU, the HR declined in all groups when contrasted with readings the following extubation to be significantly lower in groups 2 and 1 when contrasted with group 3 with no significant variation between groups 2 and 1. (Table 3). No bradycardia episodes observed in patient's groups.

As regards initial propofol dosage, it was significantly lower in both group 1 and group 2 when correlated with group 3. Also, it was significantly lower in group 2 when correlated with group 1.

For the mean end-tidal sevoflurane concentration

through anesthesia time to keep (BIS 40–60), it was significantly lower in both group 1 and group 2 when correlated with group 3. Also, it was significantly lower in group 2 when contrasted with group 1 (Table 4).

For the total dose of fentanyl used during the surgery, it was significantly lower in both groups 1 and 2 when correlated with group 3 with no significant variance between groups 1 and 2 (Table 4).

Regarding times of anesthesia induction and emergence, the time of anesthesia induction was significantly lower in both groups 1 and 2 when correlated with group 3. Also, it was significantly lower in group 2 when correlated with group 1 with no significant variation between all groups as regarding the anesthesia recovery and response times (Table 5)

Regarding the time to the first postoperative analgesic request, it was significantly expanded in group 2 when correlated with both groups 1 and 3. Additionally, It was significantly extended in group 1 when correlated with group 3 (Table 5).

Table [1]: Demographic patients' characteristics

	Group 1	Group 2	Group 3	*p-value*
Age (year)	47.5 ± 5	46.4 ± 7	48.2 ± 6	0.4101
Weight (kg)	77.2 ± 10	80.4 ± 8	79.7 ± 7	0.2074
ASA (I/II)	24/16	25/15	22/18	0.785
Surgery duration(min)	108.2± 18	103.6 ± 14	110.1 ± 15	0.1700

Data are presented as mean±SD. Group 1, Lidocaine; Group 2, Dexmedetomidine; Group 3, Saline. *P<0.005 using analysis of variance test.

Table [2]: Mean blood pressure (mmHg) variations in the research groups

	Group 1	Group 2	Group 3	*p-value*
Baseline	94.21 ± 09.83	93.71 ± 13.40	95.12 ± 12.3	0.8665
After study drug infusion	92.40 ± 10.51	84.31 ± 11.20 #†	96.86 ± 13.0	<0.001*
After anesthesia induction	74.51 ± 10.42#	70.41 ± 8.42†	82.53 ± 12.87	<0.001*
1 min after intubation	90.25 ± 13.84#	83. 81 ± 12.70†	108.30 ± 17.53	0.003*
15 min	81.30 ± 11.24#	76. 83 ± 9.61†	97.41 ± 14.31	<0.001*
30 min	77.91 ± 10.31#	73.61 ± 8.89†	88.20 ± 11.66	<0.001*
45 min	76.32 ± 9.51#	71.18 ± 7.40†	83.31 ± 10.41	0.002*
60 min	74.87 ± 10.71#	70.45 ± 9.34†	84.64 ± 12.43	0.003*
75 min	76.52 ± 12.70#	71.63 ± 09.61†	87.64 ± 13.36	<0.001*
90 min	75.72 ± 10.84#	71.41 ± 9.11†	84.53 ± 11.64	<0.001*
1 min after extubation	84.48 ± 12.73#	77.73 ± 10.68†	95.75 ± 14.31	<0.001*
Upon arrival to PACU	80.30 ± 10.62#	72.83 ± 09.72†	92.63 ± 12.77	<0.001*

Data are presented as mean±SD. Group 1, Lidocaine group; Group 2, Dexmedetomidine group; Group 3, Saline group. *P<0.005 using analysis of variance test among the four groups. # Significance with group3. † Significance between 1 and 2 groups.

Table [3]: Heart rate (beat/min) variations among the research groups

	Group 1	Group 2	Group 3	*p-value*
Baseline	83.21 ± 10.43	81.85 ± 11.65	85.12 ± 10.70	0.4086
After study drug infusion	80.43 ± 11.91	73. 30 ± 8.20[# †]	84.31 ± 9.53	0.002*
After anesthesia induction	72.51 ± 9.41[#]	67.43 ± 6.46[†]	81.50 ± 9.31	<0.001*
1 min after intubation	81.45 ± 11.22[#]	73.60 ± 8.71[†]	95.31 ± 12.43	<0.001*
15 min	74.81 ± 9.63[#]	71.81 ± 8.59[†]	88.42 ± 10.94	<0.001*
30 min	71.92 ± 10.85[#]	68.72 ± 8.59[†]	82.71 ± 10.58	<0.001*
45 min	70.31 ± 9.59[#]	66.53 ± 8.22[†]	80.31 ± 10.41	<0.001*
60 min	71.88 ± 11.91[#]	67.43 ± 8.39[†]	83.47 ± 9.78	<0.001*
75 min	71.22 ± 9.57[#]	68.32 ± 8.65[†]	81.51 ± 10.59	<0.001*
90 min	72.27 ± 10.69[#]	67.71 ± 8.38[†]	83.11 ± 9.71	<0.001*
1 min after extubation	79.83 ± 11.57[#]	73.74 ± 9.57[†]	93.56 ± 10.71	<0.001*
Upon arrival to PACU	75.26 ± 10.59[#]	70.61 ± 8.69[†]	87.51 ± 9.19	<0.001*

Data are presented as mean±SD. Group 1, Lidocaine group; Group 2, Dexmedetomidine group; Group 3, Saline group. *P<0.005 using analysis of variance test among the four groups. # Significance with group3. † Significance between 1 and 2 groups.

Table [4]: Anesthetic agent consumed through the intraoperative time

Anesthetic agent consumptions	Group 1	Group 2	Group 3	*p-value*
Propofol induction dosage (mg/kg)	1.42 ± 0.15[#]	1.02 ± 0.15[#†]	1.71 ± 0.16	<0.001*
Et Sevo. concentration %	2.32 ± 0.10[#]	1.84 ± 0.16[#†]	2.72 ± 0.15	<0.001*
Sum of intraoperative fentanyl (μg)	103.57 ± 17.43[#]	91.76 ± 10.56[†]	133.22±25.62	<0.001*

Data are presented as mean±SD. Group 1, Lidocaine group; Group 2, Dexmedetomidine group; Group 3, Saline group. *P<0.005 using analysis of variance test among the four groups. # Significance with group3. † Significance between 1 and 2 groups.

Table [5]: Anesthesia induction and emergence times

Time recorded	Group 1	Group 2	Group 3	*p-value*
Propofol induction time (s)	71.22±9.71	61.71±7.35	81.68±11.27	<0.001*
Anesthesia recovery time (min)	6.21±3.12	5.76±3.31	6.92±2.36	0.2139
Response Time (min)	8.63±3.49	7.82±3.56	9.50±2.50	0.0698
First PO analgesic (min)	43.67 ± 16.64[#]	69.38 ± 19.77[†#]	24.85±11.32	<0.001*

Data are presented as mean±SD. Group 1, Lidocaine group; Group 2, Dexmedetomidine group; Group 3, Saline group. *P<0.005 using analysis of variance test among the four groups. # Significance with group3. † Significance between 1 and 2 groups.

DISUCSSION

The present investigation was led to survey the impacts of intravenous implantation of lidocaine as well as dexmedetomidine on the surgical hemo-dynamics, anesthetic necessities as well as recuperation profiles of patients who experienced elective abdominal and pelvic surgical procedures under general anesthesia. Demographic information, the duration of the procedure as well as the standard hemodynamic strictures were practically comparable among the three examination gatherings. The MABP and HR after endotracheal intubation and in the resulting chronicles were altogether lower in groups 1 and 2 when contrasted and group 3 with no noteworthy distinction between group 2 and 1. The hemodynamic impacts of dexmedetomidine in the present investigation were steady with past examinations.

A research carried out on 81 patients who experienced various elective surgical procedures under general anesthesia indicated that surgical period dexmedetomidine gave a stable surgical period hemodynamic profile and dulled the pressor response to intubation as well as extubation[5]. Additionally, the lessening of different careful pressure reactions and upkeep of the hemodynamic solidness by dexmedetomidine were seen in another investigation where dexmedetomidine was surveyed as adjuvant to broad anesthesia in 60 patients who experienced diverse non-compulsory operational procedures[6]. However, the impact of dexmedeto-midine on hemodynamics could be clarified by its incitement of presynaptic α_2-receptors that improve the harmful criticism restraint of nor-adrenaline discharge from the fringe nerve terminal[7]

Also, it inhibits the impact on focal thoughtful outpouring brought about by the incitement of the α_2-receptor in locus coeruleus of the brainstem. [8]

Huge portions or fast infusion of dexmedeto-midine have been related to unfriendly occasions, for example, hypotension, bradycardia as well as sinus capture in sound youthful helpers with an

extraordinary vagal tone optional to the constriction of plasma catecholamine release. [9] Therefore, in the present examination, the pre-induction dexmedetomidine bolus 1 µg per kg was injected gradually and not a single patient that had bradycardia needing mediation in group 2. Similarly, various examinations have demonstrated that dexmedetomidine lessens the pain-severity and anesthetic prerequisites in the perioperative period[10-12].

In the present investigation, there was a noteworthy decrease in the propofol portions essential for anesthesia acceptance with a subsequent-related critical reduction in the propofol enlistment period in patients in the two gatherings when likened to the other investigation gatherings. This discovery was at per with the examination carried out by Sen et al. [13]. They contemplated the impacts of perioperative intravenous dexmedetomidine on propofol utilization in patients that experienced spinal surgical procedures. While carrying out their examination, results indicated that the necessity of propofol for anesthesia acceptance and support was altogether lesser in the dexmedetomidine group when contrasted with the controller group[13].

In the present examination, there was a considerable decrease in sevoflurane utilization in patients of group 2 when equated with the additional investigation gatherings. These outcomes bolster the discoveries of Alzeftawy and Elsheikh. They contemplated the impact of preoperative dexmedetomidine on the nature of anesthesia and post-mastectomy torment in patients who experienced extreme breast surgery. When carrying out their examination, results demonstrated that isoflurane prerequisites were fundamentally lesser in the dexmedetomidine bunch when likened to the controlled group[14].

Another fundamental perception in the present examination is that surgical period fentanyl utilization was mainly lesser in patients of group 2 when contrasted with bunch 3. Nonetheless, the opportunity to the principal postoperative pain-relieving necessity was altogether lengthier in patients of gathering 2 when likened to the other investigation gatherings.

These discoveries match with the consequences of an investigation done by Alzeftawy and Elsheikh.[14] While carrying out examinations, results

indicated that there was a massive decrease of surgical period fentanyl necessity and lengthier period to the main post-usable pain-relieving prerequisite for patients in the dexmedetomidine bunch when contrasted with the controlled group.

These discoveries were additionally steady along with the ones acquired by Gupta et al. They contemplated the job of surgical period intravenous dexmedetomidine on the postoperative recuperation contour of youngsters who experienced surgical procedures for back dysraphism[15]. The pain-relieving movement of α2-agonists is by all accounts intervened by both supra-spinal and spinal systems. It is imagined that focal α2-adrenoceptors in the locus ceruleus and the dorsal horn of the spinal string are associated with this activity[16].

In the present examination, there was no massive contrast in the anesthesia recuperation period and reaction time among the patients of gathering two and the other investigation gatherings. Even with their notable narcotic properties, an ongoing meta-investigation did not any proof that α2-agonists are shelving recuperation periods when utilized during the surgical period that was credited to the corresponding anesthetic[17].

Reports showed a clinically pertinent impact of lidocaine on hypnosis, regardless of whether it was administered through intravenous[18] or intra-muscular[19].

In the present investigation, there was a noteworthy decrease in the propofol anesthesia enlistment portions with a subsequent-related critical reduction in the propofol induction period in group 1 when contrasted with group 3. Consequently, this discovering was as per those acquired by Kousaka et al. They considered the impacts of lidocaine on the propofol induction portion. While carrying out their investigation, outcomes indicated that propofol anesthesia enlistment portions were fundamentally lesser with intramuscular and intravenous lidocaine groups when likened to the control group [20].

Neighborhood sedatives likewise potentiate GABA-intervened Cl− flows by restraining GABA acceptance [21]. This action could be the reason for the decrease in the propofol induction portion brought about by lidocaine experienced in the present examination.

While carrying out the present investigation it was

noted that there was a massive decrease in the sevoflurane utilization in group 1 when likened to group 3. Additionally, a few examinations demonstrated that nearby foundational anesthetic diminished inhalational anesthetic utilizations and pain-relieving demands[22]. These investigations upheld that the instrument by which IV lidocaine reduced the anesthetic prerequisites was because of its inhibitory impact on the focal sensory system.

The other perception in the present investigation is that the surgical period fentanyl utilization was substantially lesser, and the opportunity to the primary post-operative pain-relieving prerequisite was altogether lengthier in patients of group 1 when likened to group 3. The results gained support from McKay et al. They stated that perioperative necessities of narcotics were diminished by forty percent in patients that got surgical period intravenous lidocaine implantation than the individuals who got saline. [23]Another significant discovery of the present investigation is that there was no noteworthy distinction in the anesthetic recuperation period and the reaction period between the patients of group one as well as the other examination groups regardless of its CNS depressant possessions. This discovery can be credited to the associative anesthetic saving of lidocaine as well as our BIS-guided anesthesia in the present examination.

Conclusion and recommendation:

Using lidocaine and dexmedetomidine has a beneficial effect as an adjuvant to general anesthesia in patients for abdomino-pelvic procedures. Though, dexmedetomidine has a greater tolerant impact on anesthetic agent consumption intraoperatively and more extended time to the initial postoperative analgesic request than that of lidocaine with no meaningful variation among both drugs on the analgesia consumed intraoperatively.

Financial and Non-Financial Relationships and Activities of Interest

None declared by the author

REFERENCES

1. **Jaffe RA, Rowe MA.** Subanesthetic concentrations of lidocaine selectively inhibit a nociceptive response in the isolated rat spinal cord. Pain. **1995**; 60:167–174. [DOI: 10.1016/0304-3959(94)00117-w].

2. **Gertler RA, Brown HC, Mitchell DH, and Silvius EN.** Dexmedetomidine: a novel sedative-analgesic agent. BUMC Proceedings. **2001**; 14:13–21. [DOI: 10.1080/08998280. 2001.11927725].

3. **Peden CJ, Clootie AH, Stratford N, and Prys-Roberts C.** The effect of intravenous dexmedetomidine pre-medication on dose requirement of propofol to induce loss of consciousness in patients receiving alfentanil. Anesthesia. **2001**; 56:408–413. [DOI: 10.1046/j.1365-2044.2001. 01553.x].

4. **Oliveira CMB, Issy AM and Sakata RK.** Intraoperative intravenous lidocaine. Rev Bras Anestesiol. **2010**; 60 (3): 325–333. [DOI: 10.1016/S0034-7094(10)70041-6].

5. **Patel CR, Engineer SR, Shah BJ and Madhu S.** Effect of intravenous infusion of dexmedetomidine on perioperative hemodynamic changes and postoperative recovery: a study with entropy analysis. Indian J Anaesth. **2012**; 56(6):542–546. [DOI: 10.4103/0019-5049. 104571].

6. **Rao SH, Sudhakar B, Subramanyam PK.** Hemo-dynamic and anesthetic advantages of dexmedeto-midine. S Afr J Anesth Analg. **2014**; 18(6): 326–331. [DOI: 10.1620/tjem.210.153]

7. **Morgan GA, Mikhail MS, and Murray MJ.** Clinical anesthesiology. 4th ed. Land Medical Books/McGraw-Hill, Medical Publishing Division. **2006**; 13: 262.

8. **Farag E, Argalious M, Abd-Elsayed A, Ebrahim Z, Doyle DJ.** The use of dexmedetomidine in anesthesia and intensive care: a review. Curr Pharm Des. **2012**; 18 (38): 6257–6265. [DOI: 10.2174/138161212 8038 32 272].

9. **Patel AB, Ek S, Satasiya JA, Mangukiya KE.** Dexmedetomidine a simple, easy, and economical adjuvant for general anesthesia. Int J Innov Sci Res. **2015**; 12(4):561–564. [DOI: 10.1186/s42077-019-0027-9].

10. **Aho M, Lehtinen AM, Erkola O, Kallio A and Kortilla K.** The effect of intravenously administered dexmedeto-midine on perioperative hemodynamics and isoflurane requirements in patients undergoing abdominal hyster-ectomy. Anesthesiology. **1991**; 74(6):997–1002. [DOI: 10.1097/00000542-199106000-00005]

11. **Hall JE, Uhrich TD, Barney JA, Arain SR, and Ebert TJ.** Sedative, amnestic, and analgesic properties of small-dose dexmedetomidine infusions. Anesth Analg. **2000**; 90(3):699–705. [DOI: 10.1097/00000539-20000 3000-00035].

12. **Guibert A, Mogol EB, Turker G, Ogun F, Kaya FN, Ozcan B.** Intraoperative infusion of dexmedetomidine reduces perioperative analgesic requirements. Can J Anaesth. **2006**; 53(7):646–652. [DOI: 10.1007/ BF030 21622].

13. **Sen SU, Chakraborty JA, Santra SA, Mukherjee PR, Das BI.** The effect of dexmedetomidine infusion on propofol requirement for maintenance of optimum depth

of anesthesia during elective spine surgery. Indian J Anaesth. **2013**; 57(4):358–363. [DOI: 10.4103/0019-5049.118558].

14. **Alzeftawy AE, Elsheikh NA.** Evaluation of the efficacy of dexmedetomidine infusion on the quality of balanced anesthesia and postmastectomy pain. Res Opinion Anesth Intensive Care. **2015**; 2:73–78. [DOI: 10.4103 /2356-9115.172793].

15. **Gupta N, Rath GP, Prabhakar H, Dash HH.** Effect of intraoperative dexmedetomidine on postoperative recovery profile of children undergoing surgery for spinal dysraphism. J Neurosurg Anesthesiol. **2013**; 25(3):271–278. [DOI: 10.1038/srep21514].

16. **Guo TZ, Jiang JY, Buttermann AE, Maze M.** Dexmedetomidine injection into the locus ceruleus produces antinociception. Anesthesiology. 1996; 84: 873–881. [DOI: 10.1097/ 00000542 -199604000-00015].

17. **Blaudszun G, Lysakowski C, Elia N, Trame MR.** Effect of perioperative systemic α 2 agonists on postoperative morphine consumption and pain intensity: systematic review and meta-analysis of randomized controlled trials. Anesthesiology.**2012**;116:1312–1322. [DOI 10.1097/ ALN.0b013e31825681cb].

18. **Gaughen CM and Durieux M.** The effect of too much intravenous lidocaine on the bispectral index. Anesth Analg. **2006**; 103: 1464–1465. [DOI: 10.1213/01.ane. 0000247700.71278.70].

19. **Senturk M, Pembeci K, Menda F, Ozkan T, Gucyetmez B, Tugrul M, Camps E, Akpir K.** Effects of intramuscular administration of lidocaine or bupivacaine on induction and maintenance doses of propofol evaluated by bispectral index. Br J Anaesth. **2002**; 89:849–852. [DOI: 10.1093/bja/aef287].

20. **Kousaka E, Karakaya D, Baris S, Sarihasan B, Dilek A.** Effect of intramuscular and intravenous lidocaine on propofol induction dose. Med Princ Pract. **2011**; 20:71–74. [DOI: 10.1159/000319761].

21. **Nordmark J, Rydqvist B.** Local anesthetics potentiate GABA mediated Cl– currents by inhibiting GABA uptake. Neuroreport. **1997**; 8:465–468. [DOI: 10.1097/00001756-199701200-00018].

22. **Valverde A, Doherty TJ, Hernandez J, Davies W.** Effect of lidocaine on the minimum alveolar concentration of isoflurane in dogs. Vet Anesth Analg. **2004**; 31:264–267. [DOI: 10.1111/j.1467-2995.2004. 00165.x].

23. **McKay A, Gottschalk A, Poppa A, Durieux ME, Groves DS.** Systemic lidocaine decreased the perioperative opioid analgesic requirements but failed to reduce discharge time after ambulatory surgery. Anesth Analg. **2009**; 109:1805–1808. [DOI: 10.1213/ANE.0b 013e3181be371b].