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A Comparative Study of Dexmedetomidine Infusion Vs Clonidine Infusion in Maintaining Intra Operative Haemodynamic Stability and Post Op Analgesia Requirment in Laparoscopic Cholecystectomy.

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ABSTRACT

Background: Laparoscopic surgery has become the choice for many procedures owing to it's minimally invasive technique. This not only reduces the post-operative stress, but also improves the overall outcome. However, it is associated with its own complications. Various drugs have been used to counter the haemodynamic fluctuations caused by laparoscopic surgery. α2 agonists have shown good results when used intraoperatively. Aim and Objectives –1)To compare between inj.Clonidine and inj.Dexmedotamine in attenuation of stress response and haemodynamic stability intra operatively in laparoscopic surgeries. 2) To compare between the analgesia requirement between inj.Clonidine and inj.Dexmedotamine during post-operative period in laparoscopic cholecystectomy surgery. **Methods:** After obtaining approval from institutional ethical committee and written informed consent from each patient. Sixty patients aged 20-50 years undergoing laparoscopic cholecystectomy were included in the study. Patients were randomly divided into two groups of 30 patients each. Group C (Clonidine) received inj. clonidine 150 µg and group D received inj.dexmedetomidine 150 µg iv in 100ml NS 30 minutes before induction of anaesthesia. Intra-op haemodynamics, post-op pain and side effects were assessed at regular intervals. **Results:** Dexmedetomidine being a α2 receptor agonist decreases or inhibits the release of the catecholamines and vasopressin. Dexmedetomidine by its sedative, anxiolytic, and analgesic properties, provides a good haemodynamic control and decreased analgesic requirement postoperatively when compared with Clonidine. **Conclusion:** We conclude that Dexmedetomidine provides a good haemodynamic control and good analgesia when compared to Clonidine in laproscopic cholecystectomy procedures with good monitoring.

Keywords: Laparoscopic surgery, Clonidine, Dexmedetomidine, Perioperative analgesia.

INTRODUCTION

Laparoscopic cholecystectomy has been recognized since 1992 and has revolutionized gall bladder surgeries and it has now become the "gold standard" of cholelithiasis. It offers many benefits than conventional cholecystectomy, and has been promoted, as a "gentle surgery". However, this procedure is not risk free.

Haemodynamic changes observed during laparoscopy result from the combined effects of pneumoperitoneum, patient position, anaesthesia, and hypercapnia from the absorbed CO2. In addition to these pathophysiologic changes, reflex increases of vagal tone and arrhythmias can also develop.

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These changes can be attenuated or prevented by optimizing preload before pneumoperitoneum and by vasodilating agents like α2-adrenergic receptors agonists, high doses of opioids, and β-blocking agents.Various pharmacological agents were chosen to prevent haemodynamic changes associated with pneumoperitoneum.

Aho et al used α2 adrenergic receptor agonist for prevention of haemodynamic responses associated with laparoscopic surgery.[1] They found that dexmedetomidine effectively reduces the maximum heart rate response after intubation and pneumoperitoneum. Clonidine inhibits the release of catecholamine and vasopressin and thus modulates the haemodynamic changes induced by pneumoperitoneum.[2] α2 agonist are proved to have anti nociceptive properties and both the group of drugs reduce the neuro humoral effects.

An understanding of the pathophysiologic consequences of increased intra-abdominal pressure is important for the anaesthesiologist who must

ideally prevent or, when prevention is not possible, adequately respond to these changes and must evaluate and prepare the patient preoperatively in light of these disturbances.

Considering all these observations, the present study was designed to evaluate more potent drug between dexmedetomidine and clonidine in prevention of such haemodynamic changes, the attenuation of stress response and post op analgesic requirement in laparoscopic surgery.

MATERIALS AND METHODS

Source of Data

Patients posted for elective laparoscopic cholecystectomy under general anesthesia.

Method of Data Collection

a) **Sample size**: 60 patients (two groups: each group consist 30 each)
b) **Study design** - The study is a double – blinded randomized controlled trial. Where in group A contains 30 patients and group B contains 30.
c) **Sampling procedure** - Based on the hospital statistics, 80% of average of surgeries during past one year years, a total of 60 patients were enrolled in the study.
d) **Randomization** - Patients in this study were randomly categorized into these groups. Group C (n=30) and Group D (n=30) .

Selection Criteria

Inclusion criteria

1. Cholelithiasis patients posted for Laparoscopic cholecystectomy under General Anaesthesia.
2. Age between 20 to 50 years.
3. ASA 1 & 2

Exclusion criteria

1. Known allergy or hypersensitive reaction to dexmedetomidine or clonidine
2. Organ dysfunction,
3. Cardiac arrhythmia or congenital heart disease.
4. Mental retardation.
5. Ischaemic heart disease,
6. Aortic stenosis,
7. Left ventricular failure
8. Atrioventricular conduction block
9. Patients concomitantly taking clonidine, methyl dopa, beta blocking drugs, benzodiazepines and MAO inhibitors were also excluded from the study.

Ethical clearance - obtained for the study from Institutional Ethical Committee.

Informed Consent - Patients fulfilling the selection criteria were briefed about the nature of the study and a written informed consent was obtained from the selected patients.

Data collection - After obtaining written informed consent from the selected patients, demographic data was recorded and history was taken. Clinical examination was done for all patients and findings were recorded on predesigned and pretested proforma.

Pre-anaesthetic evaluation - A thorough pre-anaesthetic evaluation was performed by taking history and clinical examination. In all the patients weight, basal heart rate, respiratory rate, blood pressure and clinical signs, if any, were recorded.

Investigations like complete blood count, blood urea, and serum creatinine, random blood sugar, urine for Albumin, Sugar and Microscopy were done. Investigations like Electrocardiogram and Chest x-ray were taken.

Patients were allocated into Group A and Group B by general randomization on the day before surgery At night sedation was given. All patients received Tab.Nitravit 10mg orally as, pre-emptive analgesia treatment to all group of people respectively by a nurse who was blinded to the study drug. On the day of surgery, on arrival in the operation theatre, iv cannulation was done and monitors were attached and baseline parameters such as heart rate, systemic arterial pressure and peripheral oxygen saturation were noted down.Group C received inj. clonidine 150 µg and group D received inj.dexmedetomidine 150 µg iv in 100ml NS 30 minutes before induction of anaesthesia.

Patients are then premedicated with Inj glycopyrrolate 0.2 mg and Inj. Midazolam 2mg IV. Induction done with sleep dose of Thiopentone sodium. 3-5mg/kg. Endotracheal intubation was facilitated by Succinylcholine 1.5 mg/kg. Anaesthesia was maintained with 33% oxygen in Nitrous oxide, with Sevoflurane and Atracurium as a muscle relaxant 0.5mg/kg. Inj.Fentanyl citrate 1.5 mcg/kg and inj.Paracetomol 1 gm infusion were given intra operatively for analgesia. Ventilatory settings were adjusted to maintain end tidal carbon dioxide between 35-45 mm Hg. Pneumoperitoneum was created by insufflation of carbondioxide and operation table was tilted in reverse Trendelenburg position. Intra abdominal pressure (IAP) was not allowed to exceed 15 mm Hg throughout the surgical procedure. After pneumoperitoneum, necessary changes in ventilator setting (tidal volume, respiratory rate) were made to maintain normocapnia.The observer was totally blind about the groups or medications received by the patients.

Throughout the procedure, any rise in mean arterial pressure more than 20% from the baseline was treated with inj betaloc and top up dose of inj.fentanyl.

Systemic arterial pressure including the systolic, diastolic and mean arterial pressure(mm of Hg), heart rate(per minute), SpO2 , EtCO2(cm of H2O) and electrocardiography (ECG) were noted : (1) prior to induction (2) three minutes after endotracheal intubation (3) before pneumoperitoneum (4) fifteen minutes after

pneumoperitoneum (5) thirty minutes after pneumoperitoneum (6) ten minutes after extubation. At the end of surgery residual neuromuscular block was reversed by appropriate dose of Neostigmine and Glycopyrrolate intravenously. Trachea was extubated and patients were transferred to recovery room.

Post operative period - In the postanaesthesia care unit (PACU) they were monitored for any evidence of complications or adverse events. Degree of intensity of pain was also assessed by using 10 point visual analogue scale (VAS). Zero to ten on slide rule bar where 'zero' indicated 'no pain' and 'ten' indicated 'worst imaginable pain'

Pain was assessed at the following intervals

1) Immediately after the surgery
2) 3hrs and
3) After 6hrs,

Depending on the score, if visual analogue score is more than 4 inj.Tramadol 50 mg will be given as a rescue analgesic

Statistical Analysis

The data obtained was coded and entered into Microsoft Excel spreadsheet. Categorical data was expressed as rates, ratios and percentages and the comparison was done by Anova test. Continuous data was expressed as mean ± standard deviation (SD) and the comparison was done using ANOVA test. A 'p' value of less than 0.05 was considered as statistically significant.

RESULTS

Statistical results

The following tables describe results from Statistical analysis conducted for the following parameters at different stages of patient observation. A single factor ANNOVA analysis was conducted to statistically confirm the difference between two drugs (applied on Group C and Group D respectively) under evaluation. A significant 'p' value of 0.05 was considered to derive at the conclusions.

Demographic data was comparable between the two groups.

The initial hypothesis for each of the following parameters was that Mean of each parameter for Drug C is equal to Mean of parameter for Drug D. But the following set of tables, for each parameter show that 'p' value is less than 0.05. Hence the initial hypothesis is discarded and it is concluded that there is a difference between mean of every listed parameter for Drug C and Drug D.

Table 1: MAP

MAP (mm of Hg)						
Stages of Observation	**Group A (n=30) Mean**	**Variance**	**GroupB (n=30) Mean**	**Variance**	**f Value**	**p Value**
Before Intubation	92.4	102.17	78.33	12.89	54.05	7.2E-10
3 minutes after Intubation	76.93	34.2	77.26	8.54	0.079	0.0078
Before pneumoperitoneum	74.7	36.14	77	7.02	3.89	0.049
15 MIN after pneumoperitoneum	84.46	127	77	7.71	12.18	0.000927
30 MIN after pneumoperitoneum	74.33	12.85	77.34	4.71	15.37	0.000236
10 MIN after extubation	99.63	0.24	98.6	0.24	65.57	0.00269

It is observed that the significant value from ANNOVA test is consistently at $p<0.05$. It is also concluded that drug used on Group D is better in performance when compared to drug used on Group C.(Table 1)

Table 2: HR.

HR						
Stages of Observation	**Group C (n=30) Mean**	**Variance**	**Group D (n=30) Mean**	**Variance**	**f Value**	**p Value**
Before Intubation	73.86	21.86	71.3	3.61	7.16	0.0096
3 minutes after Intubation	69.26	5.58	71.26	3.3	13.5	0.00052
Before pneumoperitoneum	69.46	15.56	71.13	7.77	3.57	0.006
15 MIN after pneumoperitoneum	66.73	6.83	69.53	9.08	14.78	0.000302
30 MIN after pneumoperitoneum	66.67	8.22	71.2	19.99	22.49	4.25E-05
10 MIN after extubation	67.8	17.13	71.36	15.2	6.51	0.0011

It is observed that the significant value from ANNOVA test is consistently at $p<0.05$. It is concluded that drug used on Group D is better in performance when compared to drug used on Group C.(Table 2)

Table 3: $EtCO_2$.

ETCO2 (mm of Hg)						
Stages of Observation	**Group C (n=30) Mean**	**Variance**	**Group D (n=30) Mean**	**Variance**	**f Value**	**p Value**
Before Intubation	0	0	0	0	0	0
3 minutes after Intubation	26.4	7	27.8	4.37	5.16	0.026
Before pneumoperitoneum	26.86	3.77	32.8	9.82	77.68	2.6E-12
15 MIN after pneumoperitoneum	34.43	15.08	35.3	21.66	0.61	0.0436
30 MIN after pneumoperitoneum	35.56	4.8	36.94	12.61	3.21	0.00781
10 MIN after extubation	21.26	2.96	19.3	1.94	23.66	9.1E-06

It is observed that the significant value from ANNOVA test is consistently at ($p<0.05$). It is concluded that drug used on Group D is better in performance when compared to drug used on Group C.(Table 3)

Table 4: Visual Analouge Scale.

VAS						
	Group C (n=30) Mean	**Variance**	**Group D (n=30) Mean**	**Variance**	**f Value**	**p Value**
immediately	1.4	0.24	1.76	0.598	4.76	0.0153
3Hrs	2.23	0.88	2.96	0.51	23	0.000017
6Hrs	3.67	0.75	4.16	0.69	6.24	0.033

It is observed that the significant value from ANNOVA test is consistently at $p<0.05$. This demonstrates that there is a difference between the mean values for Group C and Group D.(Table 4)

DISCUSSION

Laparoscopic cholecystectomy has rapidly become the procedure of choice for routine gallbladder removal. Usually laparoscopic cholecystectomy is done under general anaesthesia, during which there will be major haemodynamic changes which are combined effects due to pnemoperitonim, principally due to gas insufflations into abdominal cavity, and patient position which will be in reverse trendelenburg position and increased CO2 i.e, hypercapnia. These haemodynamic changes are well documented in gynaecological literature but during lapraoscopic cholecystectomy patient postion has changed a lot due to which significant haemodynamic changes are seen mainly due to neurohumoral effect.

The increase in systemic vascular resistance is considered to be mediated by mechanical as well as neurohumoral factors. Indeed, the return of haemodynamic variables to baseline is gradual and takes several minutes, suggesting the involvement of neurohumoral factor(s). Catecholamines, the renin-angiotensin system, and especially vasopressin are all released during pneumoperitoneum and may contribute to increasing afterload.

In 1990 , Aho M, Lehtinen AM, Laatikainen T, et al,[2] in American journal of anaesthesiology and in 1998 Aho M, Scheinin M, Lehtinen AM, et al,[3] in Anaesthesia and Analgesia published about the use of α2-adrenergic agonists such as clonidine and β-blocking agents significantly reduced haemodynamic changes and anaesthetic requirements.

Dexmedetomidine is a highly selective, specific, and potent α2-adrenergic agonist (1,620:1 -α2: α1) that has a shorter duration of action than clonidine.(Bloor et al.,[4] 1992 Sandler 1996) Dexmedetomidine was studied in attenuation of haemodyamic changes during laparoscopic cholecystectomy surgeries since 1996. Use of high doses of remifentanil almost completely prevents the haemodynamic changes.

This randomized, double blind, prospective study was conducted on 60 patients undergoing laparoscopic cholecystectomy. Based on computer generated randomization, patients were randomized into two groups namely Group C (Patients receiving inj. Clonidine 150µgms infusion in 100ml normal saline) Group D (Patients receiving inj. Dexmedetomidine150µgms infusion in 100ml normal saline).

Tanskanen et al. in their study showed that intraoperative infusion of dexmedetomidine at a rate of 0.4 µg/kg/h maintains heart rate and blood pressure in acceptable range for a longer duration as compared to placebo group.[5] The decrease in heart rate and blood pressure is similar to the findings by Feld et al. who compared dexmedetomidine with fentanyl in bariatric surgery.[6] Thus, showing that dexmedetomidine by its sympatholytic activity attenuates various stress responses during surgery and maintains haemodynamic stability. Dexmedetomidine also blunts the haemodynamic response to emergence from anaesthesia and extubation.[7,8]

In this present study, Mean arterial pressure is measured at different stages of surgery as i)before intubation ii)3 min after intubation iii) Before Pneumoperitoneum iv) 15 Minutes after Pneumoperitoneum v) 30 Minutes after Pneumoperitoneum vi) 10 Minutes after extubation and mean is taken for each group at each stage i) Before Intubation stage the mean for Group C is 92.4±102.7 and mean for Group D is 78.3±12.89. The differences between means is statistically significant (p =7.2E-10). Similaraly ii)3 Minutes after Intubation" stage the mean for Group C is 76.93±34.2 and mean for Group D is 77.6±8.54. The differences between means is statistically significant (p =0.0078). iii) Before Pneumoperitoneum mean for Group C is 74.7±36.14 and mean for Group D is 77±7.02. The differences between means is statistically significant (p =0.049). iv) 15 Minutes after Pneumoperitoneum stage the mean for Group C is 84.46±127 and mean for Group D is 77±7.71. The differences between means is statistically significant (p =0.00092). v) 30 Minutes after Pneumoperitoneum the mean for Group C is 74.3±12.85 and mean for Group D is 77.34±4.71. The differences between means is statistically significant (p =0.00023). vi)10 Minutes after extubation" stage the mean for Group C is 99.63±0.24 and mean for Group D is 98.6±0.24. The differences between means is statistically significant (p =0.00026). Cumulatively, it is

concluded by the mean values and p value which is less than 0.05 that drug used on group D is more potent than the drug used on group C.

In this present study Heart rate is measured at different stages of surgery as i) before intubation ii) 3 min after intubation iii) Before Pneumoperitoneum iv) 15 Minutes after Pneumoperitoneum v) 30 Minutes after Pneumoperitoneum vi) 10 Minutes after extubation and mean is taken for each group at each stage i) Before Intubation stage the mean for Group C is73.86±21.86 and mean for Group D is 71.3±3.61. The differences between means is statistically significant (p =0.0096). Similaraly ii) 3 Minutes after Intubation stage the mean for Group C is 69.26±5.58 and mean for Group D is71.26±3.3The differences between means is statistically significant (p =0.00052). iii) Before Pneumoperitoneum mean for Group C is 69.46±15.56 and mean for Group D is. 71.13±7.7. The differences between means is statistically significant (p =0.006). iv) 15 Minutes after Pneumoperitoneum stage the mean for Group C is 66.73±6.83 and mean for Group D is 69.53±9.08. The differences between means is statistically significant (p =00038). v) 30 Minutes after Pneumoperitoneum ,the mean for Group C is 66.67±8.22 and mean for Group D is 71.2±7.99 . The differences between means is statistically significant (p =0.00004). vi) 10 Minutes after extubation" stage the mean for Group C is 67.8±17.13 and mean for Group D is. 71.36±15.2. The differences between means is statistically significant (p =0.0011). Cumulatively, it is concluded by the mean values and p value which is less than 0.05 that drug used on group D is more potent than the drug used on group C.

Decrease in production of catecholamines with pneumoperitoneum has reduced the haemodynamic fluctuations. Clonidine has α2 agonist properties, but does not reduce the catecholamines production with pneumoperitoneum as compare Dexmedetomidine. Other action of dexmedetomidine is post-synaptic activation of α2 adrenergic receptors in the central nervous system which inhibits sympathetic activity and therefore can decrease blood pressure and heart rate.

Dexmedetomidine does not appear to have any direct effect on heart. Effects on haemodynamics are mediated by inhibition of central sympathetic outflow. Immediately after pneumoperitoneum, plasma level of norepinephrine, epinephrine and plasma renin activity is increased. Increased catecholamine level activates the renin-angiotensin aldosterone-system (RAAS) leading to some characteristic haemodynamic alterations which include:

1. Decreased cardiac output (25-35%)
2. Elevated arterial pressure
3. Increased systemic / pulmonary vascular resistance

The EtCO2 for group C and group D observed that at "3 minutes after Intubation" stage the mean for group C is 26.4±7 and mean for Group D is 27.8±4.37. The differences between means is statistically significant (p =0.026). Hence it is concluded that drug used on Group D is better in performance when compared to drug used on Group C. The mean EtCO2 for group C and group D at "Before pneumoperitoneum" stage is 26.86±3.77 and 32.8±9.82 respectively. Also the differences between means is statistically significant (p =2.6E-12). Here group C variances are less than group D So, the drug use in group C performed better. It is observed that at "30 MIN after pneumoperitoneum" stage the mean for group C is 35.56±4.8 and mean for Group D is 36.94±12.61. Also the differences between means is statistically significant (p =0.00781). The mean EtCO2 for group C and group D at "10 MIN after extubation" stage the mean for group C is 21.26±2.96 and mean for Group D is 19.3±1.94. Also the differences between means is statistically significant (p =9.1E-06). Hence the cumulative observation leads to the conclusion that drug used on Group D is better in performance when compared to drug used on Group C.

Regarding SpO2, the mean SpO2 for group C and group D is taken. It is observed that at "Before Intubation" stage the mean for group C is 98.8±0.16 and mean for Group D is 98.73±0.2. Also the differences between means is statistically significant (p =0.0495). Hence it is concluded that drug used on Group D is better in performance when compared to drug used on Group C. The mean SpO2 for group C and group D. It is observed that at "15 Min after pneumoperitoneum" stage the mean for group C is 99.86±0.11 and mean for Group D is 100±4.46. Also the differences between means is statistically significant (p =0.038). Hence it is concluded that drug used on Group D is better in performance when compared to drug used on Group C. It is observed that at "30 MIN after pneumoperitoneum" stage the mean for group C is 99.93±0.064 and mean for Group D is 99.93±0.064.Also the differences between means is statistically significant (p =0.01). Hence it is concluded that there is no difference between Group C and Group D. The mean SpO2 for group C and group D. It is observed that at "10 MIN after extubation" stage the mean for group C is 99.96±0.24 and mean for Group D is 98.6±0.022. Also the differences between means is statistically significant (p =4.2E-12). Hence it is concluded that drug used on Group D is better in performance when compared to drug used on Group C.The cumulative conclusion is that the drug used in group D is more potent than drug used in group C.

Laparoscopic cholecystectomy is performed in reverse Trendelenburg position. This particular position causes diminished venous return, which ultimately leads to further decrease in cardiac output.[9] Normal heart can cope with the increase in

afterload under physiologic conditions. But Patients with compromised cardiac function may not be able to tolerate the changes in afterload produced by pneumoperitoneum and it may have deleterious effects on their haemodynamics. Dexmedetomidine significantly reduces the release of catecholamines in comparison to clonidine, especially norepinephrine release, thereby attenuating the increase in systemic vascular resistance.

Dexmedetomidine improves intraoperative and postoperative haemodynamic stability by stabilizing the changes in arterial pressure, heart rate and cardiac output. Our study confirms that haemodynamic changes (rise in mean arterial pressure and heart rate) are attenuated by dexmedetomidine infusion during laparoscopic cholecystectomy more than in comparison to the clonidine. In several study reports, dexmedetomidine infusion rates ranging from 0.1 to 10-µg/kg/h have been used.

The studies with higher infusion rates had more incidences of adverse effects like hypotension and bradycardia. In this study, we used dexmedetomidine in an infusion rate of 0.3 µg/kg for 30 min during laparoscopic cholecystectomy and did not observe significant incidence of hypotension or bradycardia. Dexmedetomidine causes sedation but it does not cause delay in the recovery time. Postoperative pain in laparoscopy is caused by various reasons; therefore, to reduce it, multimodal treatments are suggested.[10] There is a report that giving local anaesthetic,[11] removing residual carbon dioxide,[12] pre-emptive analgesia and dexamethasone are effective.[10]

Our study shows that dexmedetomidine significantly reduces pain scores after laparoscopic cholecystectomy. Postoperative pain is assessed by visual analogue scale scoring from 0 to 10. In each group pain is accessed i) immediately after surgery ii)3hrs after surgery and iii) 6 hrs after surgery. During the assessment 15% of people were given the rescue analgesia agent i,e inj.Tramadol 50 mg iv in Group C and only 10% of group D was given rescue analgesia. The variances in group C is less than of group D at immediately after surgery but after 3hrs of surgery group D has less variance and p value is less than 0.05. So drug used in group D is more potent than drug used in group C as the analgesic requirement post operatively is less seen in group D.

Dexmedetomidine has sedative and analgesic effects through α2 adrenoceptor in locus ceruleus.[13] The ventilatory response to hypoxia and hypercarbia is maintained. No effect on the respiratory mechanics, airway resistance or pattern of breathing has been described.[14] Ebert et al reported that sedation achieved by high plasma concentration recovered 4 h later after discontinuation of dexmedetomidine infusion.[15] This might affect emergence causing extubation delay. But in our study we have stopped the drip prior to surgery so we did not find any delay in emergence.

It is observed that Dexmedetomidine being a highly selective α2 adrenergic agonist than clonidine with sedative, anxiolytic, analgesic, sympatholytic and antihypertensive effects. Dexmedetomidine reduces the elevation of mean arterial pressure and heart rate during and after pneumoperitoneum and thereby improving perioperative haemodynamic stability during laparoscopic surgery more than clonidine. The haemodynamic stability provided by dexmedetomidine should be helpful in patients with compromised cardiac function by allowing these patients to get the benefits of the laparoscopic approach. Favourable outcome in seen in group D, in reducing stress response and maintaining the haemodynamic stability and reducing the post operative analgesic requirement in comparison to group C.

CONCLUSION

Following conclusions are made from this study:-

Dexmedetomidine being a α2 receptor agonist decreases or inhibits the release of the catecholamines and vasopressin in response to pneumoperitonium.

Dexmedetomidine by its sedative, anxiolytic, and analgesic properties, provides a good haemodynamic control during intubation, procedure and in post operatively compare to Clonidine.

Dexmedetomidine decreases the analgesic requirement postoperatively when compared with Clonidine due to its good analgesic property.

There is no much difference between the two drugs in maintaining SpO2 and EtCO2 intra and post operatively but at the end of study it is concluded that there no much variance in a group using Dexmedetomidine than compared to Clonidine.

In our study it has been concluded that dexmedetomidine provides a good haemodynamic control and good analgesia when compared to Clonidine in laparoscopic cholecystectomy procedures with good monitoring.

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