



EFFECT OF ORAL CLONIDINE PREMEDICATION ON HAEMODYNAMIC RESPONSE DURING LAPAROSCOPIC CHOLECYSTECTOMY.

Anaesthesiology

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ABSTRACT

The aim of this study is to evaluate the effects of clonidine as premedication on hemodynamic response during laparoscopic cholecystectomy. Clonidine has been shown to reduce perioperative haemodynamic instability. Sixty adult patients of ASA physical status I & II scheduled for elective laparoscopic cholecystectomy were recruited for a prospective randomized, double-blinded comparative study. All the patients were anesthetized by standard technique. Induction and maintenance of anaesthesia was same in both the groups. Pneumoperitoneum was done with CO₂ gas and intra abdominal pressure was kept upto 14 mm Hg. Heart rate, systolic, diastolic and mean arterial pressure were recorded at different time intervals.

Material and Method :- This study of oral clonidine to attenuate the hemodynamic changes to Pneumoperitoneum during laparoscopic Cholecystectomy was conducted in the Department of Anaesthesiology at SMS Hospital and Medical college, Jaipur. In this study sixty adult patients, belonging to ASA Grade I or II of Either sex, Posted for elective laparoscopic cholecystectomy were Selected for this randomized double blind study. Preoperative history taking and clinical examination was done on the day before surgery. Routine investigations were done in all patients. Special investigations were advised in selected patients. The nature of study and procedure was explained to the patient and written informed consent was taken.

CONCLUSION :- In conclusion, premedication with 150 ug oral clonidine, has been found to be relatively safe as well as effective method that provides stable haemodynamics and protection against stress response triggered by pneumoperitoneum.

KEYWORDS

INTRODUCTION :- Since in early 1970s various pathological gynaecology conditions were diagnosed and treated using laparoscopy. Laparoscopic Cholecystectomy was first performed by Phillippe Mouret in 1987, and it has become the gold standard of cholelithiasis.

Laparoscopy offers many benefits compared to conventional cholecystectomy, but it leads to stress hormonal responses (cortisol, epinephrine and nor epinephrine) increased peripheral vascular resistance and decreased cardiac output causing hemodynamic fluctuation which compromises the tissue perfusion. In addition, ventilatory changes and increase in partial pressure of carbon dioxide also occur during pneumoperitoneum. Clonidine is a 2 adrenergic receptor agonist. It activates alpha₂ adrenergic receptor in the brain and suppresses excretion of norepinephrine. This way the sympathetic impulse from the central nervous system to the internal organs is decreased. Clonidine is considered to be alpha₂ adrenergic receptor agonist antihypertensive medication which suppresses sympathetic impulse from the vasomotor center in brain. It effectively decreases mean arterial pressure, cardiac output, stroke volume and heart rate. Summarizing the data of various authors the central agonist of alpha₂ -adrenergic receptor clonidine may be very useful in anesthesia for Laparoscopic Cholecystectomy. When used for premedication it effectively suppresses reaction to stress by reducing the excretion of catecholamines. In spite of its sedational properties clonidine does not prolong artificial lung ventilation. Exerts central sympatholytic effects and has a half-life of 9-12 hrs. Clonidine increases peri operative circulatory stability in patients undergoing laparoscopic cholecystectomy and potentiates parasympathetic nervous system.

AIM : To observe hemodynamic changes i.e (Pulse blood pressure) during pneumoperitoneum (without and with) oral clonidine 150 ug in laparoscopic cholecystectomy.

Material and Method :-

Patients were divided into two groups (30 each)

Group A (Clonidine) 150 ug-Patients were given tab. Clonidine 150 ug orally 60 minutes prior to induction.

Group B (Control)-Patients given sugar coated complex 60 minutes

prior to induction.

On arrival in the operating room, pulse rate and blood pressure taken. Monitors were applied (ECG, blood pressure, pulse oximetry) and Inj. Glycopyrrrolate 0.004 mg/kg, inj. fentanyl 1.5 ug/kg inj. Midazolam 1 mg, inj. Ondansetron 2 mg. given intravenous before induction. Patients preoxygenated with 100% O₂ for 5 min. Induction accomplished with inj. thiopentone sodium 2.5%, 5-7 mg/kg i.v. followed by inj. Succinylcholine 2 mg/kg IPPV with 100% O₂ by face mask done for a minute and trachea intubated with adequate size orotracheal portex cuffed endotracheal tube. After confirming bilateral air entry equal tube was fixed. Anesthesia was maintained with O₂ and N₂O (50:50) mixture along with 0.6% to 1% isoflurane, inj. Atracurium 0.5 mg/kg bodyweight and then SOS 0.1 mg/kg as supplement.

DISCUSSION :- Hemodynamic changes associated with pneumoperitoneum was first recognised in 1947. Diamant et al reported 35% decrease cardiac output in dog with a raised intra abdominal pressure of 40 mm Hg. Various techniques and pharmacological agents have been used to counteract these detrimental effects of pneumoperitoneum. The decline in cardiac output and venous return can be attenuated by increasing circulating volume before pneumoperitoneum. Clonidine an imidazoline derivative is a selective alpha₂ -adrenergic receptor agonist. It is a potent antihypertensive drug. It produces fall in Blood pressure and decreases SVR and cardiac output. Dose of clonidine varied from 2 to 5 ug/kg in different studies clonidine tablet is rapidly and completely absorbed after oral administration and reaches peak plasma concentration within 60-90 minutes. A small oral dose of dose of clonidine is effective to decrease to incidence of perioperative myocardial ischemic episode without affecting hemodynamic stability. Aho et al used 3 ug/kg and 4.5 ug/kg clonidine for suppression of haemodynamic response to pneumoperitoneum. Rise in blood pressure and heart rate was less in both the groups but 4.5 ug/kg clonidine produced greater fall in mean arterial pressure before induction. Joris et al used very high dose of clonidine (8ug/kg) for reducing the level of catecholamine and vasopressin following pneumoperitoneum.

Malek et al used 150 ug of clonidine as i.v. infusion and intramuscularly while Sung et al and Yu et al used 150 ug of oral clonidine as premedication for maintenance of haemodynamic stability during pneumoperitoneum. This study was conducted in sixty adult

patients belonging to ASA Physical status I and II, to evaluate the effect of clonidine premedication on hemodynamic response associated with laparoscopic cholecystectomy.

HEART RATE :- The heart rate increased significantly from basal value following intubation and pneumoperitoneum in control group. Heart rate varied from 81.333+-6.819 to 74.966+- 4.222 in clonidine group & 78.833+- 4.892 to 115.433+-7.559 in control group after pneumoperitoneum increase in heart rate & P value (P<0.001) was highly significant.

BLOOD PRESSURE :- The systolic blood pressure varied from basal value 116.000+- 5.883 to 138.966+- 3.316 (Control Group) and in clonidine group it varied from 114.133 +-6.495 to 115.700+- 3.505. Diastolic Blood Pressure changed in similar manner as systolic blood pressure and remained elevated throughout surgery in control group whereas remained near value in clonidine group 70.133+-4.462 to 69.366+-2.552 and in Control Group. Pressure was varied from 71.966+-4.278 to 79.533+-3.645. There was statistically significant difference between the groups and P value was high significant (P<0.001). Mean arterial pressure increased from basal value 84.533+-4.439 to 86.533+-2.029 in clonidine group and it was 86.466+-3.936 to 105.900+- 2.643 in control group which was highly significant (P<0.001)

Pulse rate (BPM) Time	Clonidine Group (A) (Mean+-SD)	Control Group (B) (Mean+-SD)	P Value	significance
Basual Values	81.333+-6.819	78.833+-4.892	P>0.05	NS
Preinduction	79.900+-4.866	80.633+-5.340	P>0.05	NS
Prior to intubation	78.166+-5.259	78.933+-4.8204	P>0.05	NS
Just after intubation	79.033+-5.169	86.833+-7.292	P>0.001	HS
Prior to pneumoperitoneum	75.666+-3.959	94.2000+-6.930	P>0.001	HS
15 min after pneumoperitoneum	75.500+-3.511	105.466+-7.789	P>0.001	HS
30 min after pneumoperitoneum	74.333+-2.564	115.433+-7.559	P>0.001	HS
15 min after release of pneumoperitoneum	74.966+-4.222	88.633+-5.647	P>0.001	HS

CHANGES AT DIFFERENT TIME INTERVAL IN SYSTOLIC BLOOD PRESSURE IN TWO GROUPS.

Systolic blood pressure time	Clonidine Group (A) (Mean+-SD)	Control Group (B) (Mean+-SD)	P Value	significance
Basual Values	114.133+-6.495	116.000+-5.883	P>0.05	NS
Preinduction	113.600+-4.583	114.166+-5.484	P>0.05	NS
Prior to intubation	112.366+-4.205	113.900+-4.908	P>0.05	NS
Just after intubation	112.333+-3.862	121.4+-000+-4.492	P>0.001	HS
Prior to pneumoperitoneum	111.600+-3.558	122.700+-3.630	P>0.001	HS
15 min after pneumoperitoneum	113.133+-4.108	134.100+-5.725	P>0.001	HS
30 min after pneumoperitoneum	115.700+-3.505	138.966+-3.316	P>0.001	HS
15 min after release of pneumoperitoneum	83.300+-1.914	95.0333+-2.341	P>0.001	HS

CHANGES AT DIFFERENT TIME INTERVAL IN DIASTOLIC BLOOD PRESSURE IN TWO GROUPS.

Diastolic blood pressure time	Clonidine Group (A) (Mean+-SD)	Control Group (B) (Mean+-SD)	P Value	significance
Basual Values	70.133+-4.462	71.966+-4.278	P>0.05	NS
Preinduction	70.533+-3.510	71.366+-2.747	P>0.05	NS
Prior to intubation	67.366+-12.0	71.166+-3.052	P>0.05	NS
Just after intubation	70.033+-2.772	76.733+-2.612	P>0.001	HS
Prior to pneumoperitoneum	69.833+-3.553	76.933+-3.139	P>0.001	HS
15 min after pneumoperitoneum	70600+-2.786	85.900+-4.011	P>0.001	HS
30 min after pneumoperitoneum	72.033+-2.399	90.266+-3.183	P>0.001	HS
15 min after release of pneumoperitoneum	69.366+-2.552	79.533+-3.645	P>0.001	HS

CONCLUSION :- In conclusion, premedication with 150 ug oral clonidine, has been found to be relatively safe as well as effective method that provides stable haemodynamics and protection against stress response triggered by pneumoperitoneum.

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