

(11) COMPARISON OF REGIONAL WITH GENERAL ANESTHESIA TECHNIQUES FOR NON CARDIAC SURGEY IN PATIENT WITH ISCHEMIC HEART DISEASE.

Dr. Charu. J. Pandya, Dr. Urjita Modi, Dr. Kriti. D. Patel.

1. Dr. Charu. J. Pandya,

Associate Professor, Department of Anesthesia,
Smt. S.C.L. General Hospital,
Saraspur, Ahmedabad.

2. Dr. Urjita Modi.

Assistant Professor, Department of Emergency medicine,
Smt. V. S. General Hospital,
Ellisbridge, Ahmedabad.

3. Dr. Kriti. D. Patel.

Professor, Department of Anesthesia,
Smt. S.C.L General Hospital.
Saraspur, Ahmedabad.

INTRODUCTION

As incidence of ischemic heart disease (IHD) has increased dramatically nowadays, we are finding at least one or two patients of IHD daily in operating lists of our hospital. It is a life style disease and also found in younger age group.

Due to advancement in techniques and gazettes of surgery and anesthesia, more and more high risk patients are operated which includes IHD as a major risk group. The cardinal rule for anesthesia in IHD patients is that myocardial oxygen requirement should not be allowed to exceed myocardial oxygen supply. Myocardial oxygen demand can be reduced by reduction in heart rate and after load. Electrocardiograph (ECG) monitoring during anesthesia may reveal fresh events. (12) We have conducting a study in our hospital to evaluate better method of anesthesia for patients of ischemic heart disease operated for non cardiac surgery.

AIMS OF STUDY

- 1)** To compare different regional anesthesia techniques with general anesthesia technique in patients of IHD undergoing non cardiac surgery.
- 2)** To compare hemodynamic stability, heart rate, and blood pressure variability in different techniques.
- 3)** TO compare the complications (any new cardiac event) in different techniques.

MATERIAL AND METHODS

The study comprised of 100 patients of ischemic heart disease subjected to different non cardiac surgeries under general anesthesia and under various regional anesthesia.

Inclusion and exclusion criteria were decided.

INCLUSION CRITERIA

1. Patients having history of myocardial infarction in past.
2. ECG changes suggestive of myocardial ischemia, i.e. Asymptomatic T wave inversion, ST segment depression, Presence of pathological Q wave.(12)
3. Patients taking anti angina medication.
4. Patient with reports of TMT or coronary angiogram suggestive of IHD.
5. Patient with angina of exertion in NYHA class1 or 2.
6. Patient for elective surgery and with sinus rhythm.

EXCLUSION CRITERIA

1. History of myocardial infarction in last 6months.
2. ECG changes in symptomatic patient-suggestive of acute myocardial ischemia.
3. Unstable patients.
4. Patients with angina on exertion NYHA class 3 or 4.patients showing echocardiography evidence of global left ventricular hypokinesia.
5. Patients with ejection fraction less than 50%.

Clinical examination included all the systems.

Base line routine investigations were done. Special investigation like 2D Echo was asked when needed. Procedure explained to the patients and VAS Score was explained & informed written consent was taken.

Patients were randomly allocated into two groups of 50 each.

1. **Group- A** : patients operated under general anesthesia.
2. **Group- B** : patients operated under regional anesthesia.

GROUP-A

Patients were pre medicated with intravenous inj. Glycopyrrolate +inj. Midazolam. General anesthesia was induced with sodium thiopentone Neuromuscular blockade was carried out with i.v. vecuronium bromide. mechanical ventilation with mixture of 50% oxygen, 50% nitrous oxide and isoflurane / sevoflurane(14) in low concentration. During surgery patients were monitored by multipara monitor, monitoring H.R, blood pressure, SpO₂, EtCo₂ and ECG. . Postoperative analgesia was given with i.v. Tramadole and bupivacaine infiltration of the scar. Postoperative oxygen was supplied in ICU using oxygen mask until 4 hours.

GROUP –B

Procedure was explained to the patient. He was asked to communicate if any feeling of discomfort he feels during the process..

All provisions for general anesthesia and all measures for resuscitation were kept ready.

SPINAL ANESTHESIA

2 to 2.5ml of Inj. bupivacaine 0.5% injected. Level of sensory block achieved was restricted to T10/T8.

EPIDURAL ANESTHESIA

0.5% Bupivacaine 2 mg/kg injected in the space. Epidural catheter was advanced for the purpose of post operative analgesia. Level of sensory block achieved was not higher than T10/T8level.

PERIPHERAL NERVE BLOCK

With the help peripheral nerve locator, paresthesia was elicited, Inj. Bupivacaine 0.5% were given in a volume as per the need of the block. Through aseptic measures were taken. Heart rate, blood pressure, Spo2, ECG, were recorded at every five minutes.

CRITERIA FOR DEFINING COMPLICATIONS:

1. Persistence of new arrhythmia for more than a minute or ventricular ectopics more than 6 per minute were considered as complications.
2. Any positive or negative deviation of 20 mm of Hg in blood pressure or 20 beats per minute in heart rate from baseline were considered significant for Group A patients.
3. For Group B patients, absolute heart rate of less than 60 / min. and more than 120 / min were labeled as bradycardia and tachycardia respectively while systolic blood pressure more than 150 (Hypertension) and less than 90 (hypotension), diastolic blood pressure more than 90 (Hypertension) and less than 60 (Hypotension) were labeled accordingly. Complications were treated adequately per operatively. Patients were monitored in ICU for 2 days postoperatively to look for development of new ECG abnormalities, chest pain, respiratory problems and other complications. (30).

OBSERVATION AND RESULTS

Both groups were demographically comparable. Age group selected was ranging from 30-70 years. Majority patients in both the groups belongs to 50-60 years (28%in group-A, 32% in group B), and 60-70 years (32% in group A, 28% in group B).

TABLE I: PRESENCE OF CLINICAL RISK FACTORS IN BOTH GROUPS

	GROUP-A	GROUP-B	P Value
MAJOR	0	0	0
INTERMEDIATE			
Mild Angina (NYHA class I/II)	25	25	1
Prior MI(Q Wave / old MI in ECG)	1	4	0.17
Compensated Heart Failure	0	0	0
Diabetes Mellitus	2	3	0.65
Renal insufficiency	0	0	0
MINOR			
Advanced age (>65)	3	4	0.70
Abnormal ECG	25	25	1
Rhythm other than sinus	0	0	0
H/O Stroke	0	1	0.31
Uncontrolled Hypertension (> 140/90)	7	7	1

Debrata Mukerji and Eagle et al (2).

Most of the surgeries conducted in this study involved intermediate surgical risk.

In Group A, 50% patients were given isofluane and other 50% were given sevoflurane.

In Group B, 48% patients were given Spinal anesthesia, 24% were given Epidural anesthesia, 28% were given nerve blocks.

Table 2; INCIDENCE OF COMPLICATIONS IN GROUP A PATIENTS

	ISOFLURANE	SEVOFLURANE	P Value
HYPOTENSION	10 PATIENTS (40%)	7 PATIENTS (28%)	0.46
HYPERTENSION	12 PATIENTS (48%)	7 PATIENTS (28%)	0.25
BRADYCARDIA	1 PATIENT (4%)	3 PATIENTS (12%)	0.31
TACHYCARDIA	17 PATIENTS (68%)	3 PATIENTS (12%)	0.001
ISCHEMIC CHANGES	4 PATIENTS (16%)	NO PATIENT	0.04
ARRHYTHMIAS	4 PATIENTS (16%)	NO PATIENT	0.04

Table 3: INCIDENCE OF COMPLICATIONS IN GROUP B PATIENTS

	SPINAL	EPIDURAL	NERVE BLOCK	P Value
HYPOTENSION	6 PATIENTS (24%)	2PATIENTS (16%)	0 PATIIENTS (0%)	0.03
HYPERTENSION	2 PATIENTS (4%)	0 PATIENTS (0%)	0 PATIENTS (0%)	0.13
BRADYCARDIA	2 PATIENTS (4%)	0 PATIENTS (0%)	0 APTIENTS (0%)	0.13
TACHYCARDIA	4 PATIENTS (8%)	0 PATIENTS (0%)	0 PATIENTS (0%)	0.01
ISCHEMIC CHANGES	2 PATIENTS (4%)	0 PATIENTS (0%)	NO PATIENT (0%)	0.13
ARRHYTHEMIAS	2 PATIENTS (4%)	0 PATIENTS (0%)	NO PATIENT (0%)	0.13

DISCUSSTION & CONCLUSION.

Because of wide By careful understanding of the physiology of coronary circulation and knowing the factors that increase myocardial oxygen demand and factors that decrease myocardial oxygen supply, we can improve the anesthetic management of the patients with IHD undergoing noncardiac surgery, Availability of anesthetic agents, one can say that there is no universally accepted agents or techniques that apply to all patients of ischemic heart disease. Each patient should be treated as an individual with unique problems.

Preoperative optimization of blood pressure and heart rate is essential to achieve better out come. Incidents of Post operative myocardial infarction and dangerous arrythemias are more seen in IHD patients undergoing noncardiac surgery.(6) These patients should be kept in intensive care unit (ICU) for 2-3 post operative days. Beta blocker along with calcium channel blockers were used for the purpose. (8)

A comparison was made between general (group A) and various regional anesthesia (group B) techniques. Heart rate variability and blood pressure fluctuations were more apparent in group A patients, which were seen intra operatively (20 minutes after induction), in B group hemodynamic changes were seen during immediate post induction period. Elderly patients had higher complication rate in group-A. Postoperative minor complaints were more common in group-A (32% vs 8%). Overall complication rate was significantly higher in general anesthesia group (76%) as compared to regional anesthesia group (24%), in our study. There were more chances of fresh IHD –many times life threatening in elderly patients undergoing non cardiac surgery under General anesthesia. (9)General anesthesia was also less effective in relieving post operative pain as compared to regional anesthesia group irrespective of mode of analgesia used.

In group A, patients receiving sevoflurane as a maintenance agent suffered less cardiac complications as compared to patients receiving Isoflurane.(5). In group B, patients who were operated under peripheral nerve block had no complication as expected while epidural sub group was hemodynamically more stable than spinal sub group.

REFERANCES :

1. Sam Kaddoura. Heart failure, myocardium and peri cardium. In: Echo made easy. 1st edition, Chuchil Livingstone, p-76.
2. Eagle KA, Berger PB, Calkins H, et al. ACC/AHA guideline update for peri operative evaluation for noncardiac surgery- executive summary. Update on 1996 guide lines for perioperative cardiovascular Evaluation for Noncardiac surgery.
3. Chassot PG, DELAbays A, Spahn AR. Preoperative evaluation of patients with coronary artery disease undergoing noncardiac surgery. Br J Anesthesia 2002 89(5): 747-759.
4. Dupuis JY, Labinaz M. Noncardiac surgery in patients with coronary stent: What should the Anesthesiologist know? Can J Anaesth 2005: 52 ; 356.
5. Steven RD, Burri H, Tramer MR. Pharmecologic myocardial protection in patients undergoing noncardiac surgery : a quantitative systemic review. Anesth Analg 2003: 97: 623- Agnew NM, Pennefatuer SH, Russel GN. Isoflurane and coronary heart disease. Anesthesia 2002: 57 :338-347.
6. Barash PG. Sequential monitoring of myocardial ischemia in perioperative period. In: American society of Anesthesiologist Review Lectures. Atlanta; American society of Anesthesiology ; 2005. p-411.
7. Damen J, Nierich A. prevention of cardiac complications following non cardiac surgery. Current anesthesia and Critical care 2001; 12(6); 315-328.
8. Konstadt S. Anesthesia for noncardiac surgery in the patients with cardiac disease. Can J Anaesthesia 2005: 52 (6) : R1-R3.
9. Kaul TK, Tayal G. Anesthetic considerations in cardiac patients undergoing noncardiac surgery. Indian Journal of Anesthesia 2007 : 51(4); 280-286.
10. Backlund M, Toivonen L, Tuominen M, Pere P, Lindgren L. Changes in heartrate variability in elderly patients undergoing major noncardiac surgery under spinal or general anesthesia. Reg Anesth Pain Med 1999: 24(5): 386-392
11. Jonathan B Shammash, MD et al., May 2013;
<http://www.uptodate.com/contents/estimation-of-cardiac-risk-prior-to-noncardiac-surgery>
12. London MJ, Zaugg M, Schaub MC, etal, perioperative beta adrenergic receptor blockad e: physiologic foundations and clinical controversies. Anaesthesiology 2004; 100-107.