



A COMPARATIVE STUDY OF EARLY POST OPERATIVE CARDIOVASCULAR COMPLICATIONS IN EMERGENCY LAPAROTOMIES IN DIABETIC & NON DIABETIC PATIENTS.

General Surgery

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ABSTRACT

Introduction: The acute surgical abdomen is a clinical entity where, the exact diagnosis can't be made in time to save the patient's life. Earliest possible exploration of acute abdomen is therefore the thumb rule in surgical practice. Hyponatremia and hypokalemia are usual indicators of acute myocardial infarction (MI). Therefore this study was conducted to evaluate the early cardiovascular complications of patients undergoing emergency laparotomies in both diabetic and non diabetic patients.

Materials and Methods: Prospective study of 60 patients were conducted from October 2016 to September 2017. Group 'A' consisted of 30 patients with diabetes mellitus and patients with random blood sugar level (BSL) > 200 mg/dl, who underwent emergency laparotomies whereas, Group 'B' consisted of non-diabetic patients who underwent Emergency Laparotomies. Demographical data of all patients were collected. Laboratory investigations, Cardiology and Radiological Investigations were done. Under general anaesthesia emergency laparotomies were performed. Post-operative BSL charting was done for diabetic patients, as well as for those patients who had random blood sugar more than 200 mg/dl preoperatively. All patients who underwent emergency laparotomies and had cardiovascular complications within first 7 post operative days were considered as subjects of our comparative study.

Results: Forty percent diabetic patients were in age group of 41-60 years, as compared to 30% non-diabetic patients. 6.67% diabetic patients suffered from myocardial infarction as compared to 3.33% non-diabetic patients. Cardiovascular complications were markedly seen between post-operative days 3 to 5 in both the groups. Two diabetic patients suffered from hypokalemia as compared to 1 non diabetic patient.

Conclusion: Experienced and judicious medical and surgical judgment should mandate the surgical treatment in diabetic patients. Decrease in potassium level in early post-operative period is directly related to progression to acute myocardial infarction. Diabetic patients are more prone to go into hypokalemia than non-diabetic patients.

KEYWORDS

Introduction:

The acute surgical abdomen is a clinical entity where, the exact diagnosis can't be made in time to save the patient's life. Earliest possible exploration of acute abdomen is therefore the thumb rule in surgical practice.[1] Penetrating wound of the abdomen should be explored immediately.[2] Any other abdominal injury which fails to improve the condition of patient after six hours should be subjected to surgical exploration.[1]

Hyponatremia and hypokalemia are usual indicators of acute myocardial infarction (MI). Serum sodium and potassium levels are the main prognostic indicators in patients with cardiovascular complications in post-operative period. Rise in sodium levels after initial fall is indicative of clinical improvement and hence, estimation of sodium and potassium level in acute MI patients can help in assessing prognosis.[2,3]

According to our knowledge, scanty literature is available on early post operative cardiovascular complications of emergency laparotomies in diabetic and non-diabetic patients. Therefore this study was conducted to evaluate the early cardiovascular complications of patients undergoing emergency laparotomies in both diabetic and non diabetic patients.

Materials & Methods:

Prospective study of 60 patients were conducted in Dr. D.Y. Patil Medical College, Hospital and Research Centre from October 2016 to September 2017. Patients were divided in to two groups. Group 'A' consisted of 30 patients with diabetes mellitus and patients with random blood sugar level (BSL) > 200 mg/dl, who underwent emergency laparotomies whereas, Group 'B' consisted of non-diabetic patients who underwent Emergency Laparotomies. Patients less than 18 years of age were excluded in this study.

On admission demographical data of all patients were collected. Laboratory investigations like Haemogram, Liver Function Tests, Renal Function Tests, Serum Electrolytes, Blood Sugar Level

(Random), Serum Amylase, Serum Lipase, Urine routine and microscopy were done. Cardiology Investigations like electrocardiogram (ECG) & 2-D echogram were done, whenever indicated.

Radiological Investigations like X-ray erect abdomen, X-ray chest, ultra-sonography of abdomen and pelvis and contrast or plain computer tomography(CT) scan were done whenever required.

All the patients were catheterized and Ryle's Tube insertion was done. Prophylactic antibiotics - Inj. Ceftriaxone 1gm i.v 12 hourly, Inj. Metronidazole 500 mg i.v 8 hourly were given empirically to all the patients preoperatively.

Under general anaesthesia emergency laparotomies were performed through midline incision. In diabetic patients undergoing emergency laparotomies pre-operative BSL was checked and according to the sliding scale inj. Human Actrapid was given. Intra-operatively BSL monitoring was done every 1 hourly and Inj. Human Actrapid was administered again.

Diabetic and non-diabetic patients were shifted to the Surgical Intensive Care Unit (SICU) post-operatively when BSL level was deranged and patient was haemodynamically unstable. Otherwise, they were shifted to ward. All SICU patients were shifted back to ward only after their BSL level returned to the normal range and they became stable.

Vitals of the patient such as pulse, blood pressure, temperature and respiratory rate and oxygen saturation level were monitored continuously. Injections Ceftriaxone, Metronidazole and Amikacin were given to all the patients empirically post operatively for 3 days. When, Renal function tests was found to be deranged either preoperatively or post operatively, amino glycosides as well as nephrotoxic drugs were omitted. Later on, Antibiotics were given as per culture and sensitivity report of post operative wound if present, after the check dressing done or peritoneal fluid which was sent for

culture and sensitivity.

Post-operative BSL charting was done for diabetic patients, as well as for those patients who had random blood sugar more than 200 mg/dl preoperatively. Fasting lipid profile (FLP) and glycosylated haemoglobin (HBA1C) were tested on post-operative day 1 in diabetic patients as well as in patients with random blood sugar more than 200 mg/dl preoperatively. BSL charting was done 8 hrly. Diabetic diet was started for the diabetic patients after bowel peristalsis confirmation. After Diabetic diet was started Fasting BSL, Post Prandial 1 & Post Prandial 2 BSL were monitored. Appropriate fixed dose Insulin along with other appropriate hypoglycemic drugs were given according to the BSL.

The patients were discharged after confirmation of healthy suture line and controlled BSL levels, irrespective of their post operative days. All non-diabetic and diabetic patients who underwent emergency laparotomy and had cardiovascular complications within first 7 post operative days were considered as subjects of our comparative study.

Results:

Table 1: Age distribution of patients:

Age group	GROUP A	Percent	GROUP B	Percent
20-40	8	26.67%	8	26.67%
41 – 60	12	40%	9	30y%
>60	10	33.33%	13	43.33%
Total	30	100%	30	100%

In our study 40% diabetic patients were in age group of 41-60 years, as compared to 30% non-diabetic patients. We found that, 26.67% patients were in the age group of 20-40 years in each group. We also found that, 33.33% diabetic patients were in age group of more than 60 years as compared to 43.33% non diabetic patients. [Table :1]

Table 2: Early post-operative cardiovascular complications:

Cardiac complication	Group A	Percent	Group B	Percent
Acute Myocardial Infarction	2	6.67%	1	3.33%
Arrhythmia, Atrial Fibrillation, Complete Heart Block, Cardiac Arrest and others	0	0	0	0
No Complications	28	93.33%	29	96.67%
Total	30	100%	30	100%

6.67% diabetic patients suffered from myocardial infarction as compared to 3.33% non-diabetic patients. Other cardiac complications such as arrhythmia, atrial fibrillation, complete heart block were not reported in both groups, in our study. [Table:2]. All of these cardiovascular complications were markedly seen between post-operative day 3 to 5 in both the groups.

Table 3: Correlation of serum potassium and sodium levels in Diabetic & Non Diabetic patients:

Serum Potassium & Sodium levels in post-operative period	Group A	Percent	Group B	Percent
Hypokalemia	2	6.67%	1	3.33%
Hyponatremia	0	0	0	0
Hyperkalemia	0	0	0	0
Hypernatremia	0	0	0	0
Normal Sodium and Potassium level	28	93.33%	29	96.67%
Total	30	100%	30	100%

Two diabetic patients suffered from hypokalemia as compared to 1 non diabetic patient, in our study, all of them had acute MI later on in between 3 to 5 post-operative days. [Table: 3]. We did not found hyponatremia in any of our patients in either group.

Discussion:

In a comparative study, by Vinod Wali et al. they concluded that hypokalemia occurs in early onset acute myocardial infarction.[3] In our study, 2 diabetic patients suffered from hypokalemia and later had myocardial infarction. These 2 patients died eventually in early post-operative period. Whereas, 1 non-diabetic patient suffered from hypokalemia which later progressed to acute myocardial infarction & died on 4th post-operative day.

Mohan Kumar et al, in their study found that, cardiac complications were observed in 8 patients, in the form of cardiac arrest in 7 patients and MI in 1 patient.[4] In our study, 2 diabetic patients had MI post-operatively whereas, only 1 non diabetic patient was reported to have Acute MI in the early post operative period. We found that, 2 diabetic patients went into MI due to hypokalemia in between post-operative day 3 to 5 whereas, one study found that MI was seen immediately within 24 hrs of the surgery.[4]

According to one study, incidence of early post-operative complications are augmented when associated with diabetes.[5] Diabetic patients often have microvascular and macrovascular pathology that influences their peri-operative course and have a significantly higher risk of post operative cardiovascular morbidity and mortality. [6]

Conclusion:

It is important to realize that prolonged postponement of surgical procedure until each and every metabolic parameter are perfectly normalized may lead to a serious and at times lethal complication of surgical condition. Experienced and judicious medical and surgical judgment should mandate the surgical treatment in diabetic patients. Decrease in potassium level in early post-operative period is directly related to progression to acute myocardial infarction, according to the our study. Diabetic patients are more prone to go into hypokalemia than non-diabetic patients. Therefore, electrolyte monitoring is most important in early post-operative period in patients undergoing emergency laparotomies.

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