Research Paper Medical Science

Mortality As A Post Operative Complication in Emergency Laparotomies in Diabetic Patients.

B.D Dhaigude	Professor, Dept of General Surgery, Dr DY Patil Medical College , Pimpri, Pune 411018.
Shama Sikandar Shaikh	Assistant Professor, Dept of General Surgery, Dr DY Patil Medical College , Pimpri, Pune 411018
Aditya Ghatnekar	Resident, Dept of General Surgery, Dr DY Patil Medical College , Pimpri, Pune 411018
Bahul Vakaria	Resident, Dept of General Surgery, Dr DY Patil Medical College , Pimpri, Pune 411018
Aneesh Sugunan	Resident, Dept of General Surgery, Dr DY Patil Medical College , Pimpri, Pune 411018
Shilpi Shree	Resident, Dept of General Surgery, Dr DY Patil Medical College , Pimpri, Pune 411018

ABSTRACT

Background: Prediction of serious complications and mortality are essential part of risk management in surgery. So this study was conducted to evaluate the causes of mortality as a post operative complications and mortality in diabetic and non diabetic patients undergoing emergency laparotomies. Methodology: 60 patients were divided in two groups of Group A – 30 patients underwent Emergency Laparotomy who were known cases of Diabetes Mellitus as well as those whose random BSL was >200 mg/dl preoperatively & Group B – 30 Non Diabetic patients who underwent Emergency Laparotomy . All patients who underwent emergency laparotomies were 18 yrs of age & above were included in the study. Indications for emergency laparotomy in diabetics & non diabetics & causes for mortality in diabetics and non diabetics who underwent emergency laparotomy were noted .Result : Postoperative complications were more noted in the group of diabetic patients with compared to the patients with non diabetic patients . Conclusion : Decision of emergency laparotomy should be taken & proceeded with irrespective of diabetic or non diabetic condition of patients if it is life saving.

KEYWORDS

INTRODUCTION

Prediction of serious complications and mortality are essential part of risk management in surgery [1]. Knowing which patient is at risk of developing complications or dying contributes to the quality of surgical care and cost reduction in surgery [1,2]. It is therefore essential to identify and make appropriate decision on those patients who are at high-risk of developing serious complications or die [3.4.5] Postoperative mortality of patients who underwent laparotomy in Dr. DY Patil Hospital was studied using Physiological and Operative Severity Score for the enumeration of Mortality and Morbidity (POSSUM). Criteria for the diagnosis of diabetes mellitus: Symptoms of diabetes plus random blood glucose concentration > 200mg/dl or Fasting plasma glucose (8 hours) > 126mg/dl or HBA1C >6.5% or Two- hour plasma glucose > 200mg/dl during an oral glucose tolerance test. So this study was conducted to evaluate the causes of mortality as a post operative complications in diabetic and non diabetic patients undergoing emergency laparotomies & to compare the post operative mortality rate in diabetic and non diabetic patients undergoing Emergency Laparotomies.

MATERIALS & METHODS

This was a prospective type of study conducted in Dr. D. Y. Patil Medical College, Hospital and Research Centre from July 2014 – June 2015 . 60 patients were divided in two groups: Group A – 30 patients underwent Emergency Laparotomy who were known cases of Diabetes Mellitus as well as those whose random BSL was >200 mg/dl preoperatively & Group B – 30 Non Diabetic patients who underwent Emergency Laparotomy. All patients of 18 yrs & above age who underwent emergency laparotomies were included in the study. Immuno-compromised patients, patients with malignancies and patients with Chronic Obstructive Pulmonary Diseases, Gynecological and Urological Emergencies, Pediatric Age group were excluded from the stud .Institutional ethical committee approval was taken prior to start of study.

On Admission Laboratory investigations like Haemogram, Liver Function Tests, Renal Function Tests, Serum Amylase, Serum Lipase, Serum Electrolytes, Blood Sugar Level (Random), Urine routine and microscopy. Cardiology Investigations i.e Electrocardiogram & 2 D Echo Cardiography were done whenever needed. Radiological Investigations included X-ray Erect Abdomen , X-ray Chest, Ultra sonography Abdomen and Pelvis.

All of the patients were catheterized and Ryle's Tube insertion of appropriate size was done and prophylactic antibiotics (Inj. Ceftriaxone 1gm i.v 12 hrly ,Inj. Metronidazole 500 mg i.v 8 hrly) were given preoperatively . Preparation of operative part was done with epilator in all patients. Adequate amount of blood or its components were reserved depending upon the Haemogram values preoperatively, as well as by assessing the projected blood loss intraoperative and the requirement of blood postoperatively in consultation with the anaesthetists.

General anaesthesia was administered to all of the patients. Midline incision extending from epigastric to infra umbilical was taken. In diabetic patients undergoing emergency laparotomy Pre Op BSL was checked and according to BSL value Inj. Human Actrapid was given according to sliding scale. Intra operatively BSL monitoring was done every 1 hourly and Inj. Human Actrapid was given according to sliding scale Intra operatively all the vitals such as pulse BP, RR, Temperature were monitored by the anaesthetists and appropriate anaesthetic management were done where required. Intra abdominal drains were placed in Left and Right paracolic gutter using Kocher's forceps on either side of the abdomen away from the suture line. Closure of laparotomy wound was done in the following steps; Peritoneum was closed using Vicryl 2-0 round bodied absorbable sutures. Rectus sheath was closed using loop ethilon 1 suture. Skin was closed using ethilon 2-0 non absorbable sutures Dressing was done after applying povidone iodine soaked sterile gauze pieces with sterile pads over the suture line.

Choice of wards post operatively was done . Diabetic Patients who underwent Emergency laparotomy were admitted in the Surgical Intensive Care Unit of the hospital if BSL level post operatively were deranged and haemodynamically unstable. If BSL levels were within normal limits and patient were haemodynamically stable they were shifted to respective Surgery Wards. Non diabetic patients who underwent emergency laparotomy were shifted to respective surgery wards if haemodynamically stable , otherwise shifted to SICU.

All the patients were shifted back to ward only after their BSL were within normal range and they were stable haemodynamically irrespective of the post operative day. Post operatively Ryle's tube aspiration was done every 2 hourly and continuous connection was done and chart was studied 12 hrly till it was in situ. All vitals of the patient such as pulse BP Temperature and Respiratory rate and spo2 monitored adequately. Urine output charts were studied 12 hourly till discharge. Drain output charting was done every 12 hourly till it was in situ. In cases where drain output was found to be less than 5 ml for consecutive 3 days, drains were removed irrespective of post operative day. Injections Ceftriaxone , Metronidazole, Amikacin was given to all patients empirically post operatively for 3 days. If the Renal function Tests were found to be deranged either preoperatively or post operatively then then Inj. Amikacin and all other 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 ssentfor culture and sensitivity intraoperatively for all the patients. Inj. Pantoprazole 40 mg IV 12 hrly was given to all patients post operatively. Inj Tramadol 1 amp in 100 ml NS IV 12 hrly was given to all patients postoperatively. Inj. Ondensetron 4 mg IV 12 hrly was given to all patients postoperatively. 5 points of IV fluids i.e NS/ RL alternately.

Post Operative Care for Diabetic Patients Inj. Human Actrapid according to sliding scale subcutaneously. BSL charting was done for diabetic patients as well as those patients who had random blood sugar more than 200 mg/dl preoperatively. Fasting Lipid Profile and HBA1C were studied on Post operative day 1 for diabetic patients as well as those patients who had random blood sugar more than 200 mg/dl preoperatively. BSL charting was done 8 hrly. As soon as bowel sounds on auscultation were established & flatus was passed Diabetic diet was started for the diabetic patients. After Diabetic diet was started, BSL Fasting, Post Prandial 1 & Post Prandial 2 were monitored in these patients. Values of BSL charts, Fasting lipid profile and HBA1C were monitored & appropriate fixed dose Insulin along with other appropriate hypoglycemic drugs were given after consultation with the physicians at the hospital.

Dressing Protocol for Diabetic Patients: Check dressing was done under all aseptic precaution after 48 hours of surgery. Afterwards daily dressings were done till both drains & sutures were removed. Discharge or collection from the wound were sent for pus culture and sensitivity. According to the culture and sensitivity report appropriate antibiotics were started.

Post Operative Care for Non Diabetic Patients: As per dressing protocol non diabetic patients, dressing was done under all aseptic precaution after 48 hours of surgery. If any discharge or collection was present, then according to site of collection or discharge 1 or 2 sutures were removed and sent for pus culture and sensitivity. According to the culture and sensitivity report appropriate antibiotics were started. Afterwards daily dressings were done till both drains & sutures were removed. The patients were discharged after they were haemodynamically stable and they were symptomatically relieved and their BSL levels were under control irrespective of their post operative days.

All non diabetic and diabetic patients who underwent emergency laparotomy and did not survive post operatively were issued death certificates in line with the norms prescribed from time to time by the appropriate authorities in the Government of Maharashtra.

All non diabetic and diabetic patients who underwent emergency laparotomy and did not survive post operatively were taken as subjects of mortality for our comparative study.

In our study total 60 patients were studied out of which 6 did not survive post operatively. Out of these 6 patients 4 patients were diabetic patients and 2 were non diabetic patients

Emergency Laparotomy	Diabetics	Non Diabetics
Perforation Peritonitis	20	27
Haemoperitoneum	2	1
Intestinal Obstruction	8	2

The above table showed that in our study maximum number of non diabetic patients underwent emergency laparotomy for perforation peritonitis and maximum number of diabetic patients underwent surgeries for intestinal obstruction.

Table 2: Causes for mortality in diabetics and non diabetics who underwent emergency laparotomy

Causes	Diabetics	Non Diabetics
Septicemia	2	2
Respiratory Failure	1	0
Multiorgan failure i.e Renal failure, cardiac failure(silent MI)	1	0

The above table showed that the number of patients dying due to septicemia was same whereas diabetics were more prone to have mortality due to respiratory failure &multiorgan failure.

DISCUSSION

In a study conducted by S Shetty et al. Comparison of early post operative complications on laparotomies on diabetics and non diabetics- a study on South Indian population[6] they concluded that mortality in diabetic patients is 8.5% v/s 3.3% in non diabetic patients.

In our study, the 30 day mortality rate for all 60 patients undergoing emergency laparotomies was 10%.

In our study, the 30 day mortality rate for diabetic patients was 13.3% and non diabetic patients was 6.7% which is slightly higher than the study conducted by S.Shetty et al. as quoted above.

In our study, there was no mortality for patients both diabetic and non diabetic aged 18-30 years. In patients aged 31-50 the mortality rate was 6.67% each for diabetic and non diabetic patients. For patients aged 71-90 the mortality rate for diabetic patients was 3.33% and there was no mortality for non diabetic patients.

In our study we found that the mortality rate due to septic shock was 6.67% each in diabetic and non diabetic patients. These patients went into septic shock due to anastomotic leak. This is slightly higher than study conducted by S. Shetty et al. In their study percentage of patients i.e diabetic and non diabetic having anastomotic leak was 3.4% and 1.9% respectively.

In a study conducted by Kimberly Steidy et al. [7] Patients with AKI had fewer ventilator-free and intensive care unit free days and a decreased likelihood of discharge to home. Morbidity and mortality increased with severity of AKI, and AKI of any severity was found to be a strong predictor of hospital mortality in surgical sepsis.

In our study one patient was in diabetic Ketoacidosis pre operatively; after undergoing emergency laparotomy he had hypokalemia post operatively and hyper natremia which led to Acute kidney injury progressing to End stage kidney disease and subsequently renal failure hence the patient did not survive post operatively.In our study the mortality rate due to Diabetic kidney disease was 3.33%.

So it could be concluded that Diabetic patients are more prone to mortality than non diabetic patients. Mortality rate in diabetic patients in our study has been found to be 13.3% and in non diabetic patients 6.7%. Diabetic Ketoacidosis post operatively leads to multi organ failure & causes mortality. Septicemia post operatively leads to septic shock thereby leading to decreased perfusion leading to hypoxia & ultimately death in both diabetic & non diabetic patients. Renal failure pre operatively & post operatively increases the mortality rate significantly in diabetic patients. Good BSL control post operatively helps in reduction of mortality significantly. Decision of emergency laparotomy should be taken & proceeded with irrespective of diabetic or non diabetic patients if it is life saving.

References :

1. Neary WD. The Physiological and operative Severity score for the enumeration of mortality and morbidity (POSSSUM). Br J Surg. 2003; 90:157-165.
2. Chang R. Individual outcome prediction models for predictive care unit. Lancet, 1989; 11:143-146.
3. Knaus WA, Wagner DP, Draper EA et al. the POSSUM III prognostic system. Risk prediction of hospital mortality for critically ill hospitalized patients. Chest1, 991; 100:1619-1636.
4. Copeland GP, Jones D, and Walter M. POSSUM: A Scoring system for surgical Audit. Br J Surg. 1991:356-360.
5. Bann SD. comparative Audit: The trouble with POSSUM. JR Soc. Med, 2001; 94:632-634.
6. A R, S Shetty, S Rai, R Bhat, S Rao, P Thejeswi, P , S R HS Comparison of early post operative complications of laparotomies in diabetics andd non diabetics- A study on south Indain population Internet scientific publications Volume 13 Issue 3
7. Kimberly Reidy,1,2 Hyun Mi Kang,1 Thomas Hostetter,3 and Katalin Susztak1 Molecular mechanisms of diabetic kidney disease The Journal of Clinical Investigation Volume 124 Number 6 June 2014 Pg. 2333-2340