



Original Article

The influence of nutritional status on complications after major intra abdominal Surgery.

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Abstract

Background: Malnutrition is an impairment of health resulting from a deficiency or imbalance of nutrients, are associated with alteration in cellular physiology and organ function, which are of importance for the surgical patients. Protein energy malnutrition is a known clinical problem in hospital has an important role on post operative outcome so that necessary measures can be taken to improve nutritional status of these patients and improve post operative outcome. **Objective:** The objectives of this study are to assess the relation of nutritional status with post operative complications following major intra-abdominal surgery and to find out the complications in a malnourished patient. **Method:** This is prospective descriptive Study. The sample for the study constituted 100 randomly selected of major intra abdominal surgery age ≥ 12 yrs which was admitted the surgical ward of SSMC& Mitford Hospital, Dhaka from May 2010 to October 2010 as a case of elective abdominal surgery.

Result: Higher Prevalence of malnourished was found among elective surgical patient that about 48-57%. Regarding pattern of post operative complication among malnourished patient pulmonary complication 15.3% (Average 11%) Wound infection 17% (Average 12%) Breast abdomen 2.8% (Average 4.1%) Excess duration of Hospital Stay in malnourished group than the Nutritionally Sound group was about 11 days.

Conclusion: There is significant number of surgical patient suffering from different type of Nutritional imbalance. Due attention should be given to improve nutritional status of a patient before any major intrabdominal surgery.

Key words: Malnutrition, Intra abdominal Surgery.

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Introduction

Bangladesh is a developing country. Overall nutritional status of our population is poor. Roughly about half of our population has been suffering from nutritional problem.¹ The nutritional status of a patient is an important factor in determining outcome of surgery. In surgical practice pre-existing malnutrition is a well known

clinical problem. They are at increased risk of nutrition related complication like infection, poor wound healing and other adverse outcome. In a British study by Mc Whirter and Pennington in 1994 it was found that up to 40% of patients were under nourished at the time of admission to hospital.² It has been suggested that malnutrition

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frequently happens in hospital, were it is often unrecognized.

Adverse consequence of malnutrition occurs from protein energy deficiencies, vitamin deficiencies and trace element deficiencies. Protein calorie malnutrition in surgical patients is associated with decreased lean muscle mass, altered respiratory mechanism, and impaired immune function and intestinal atrophy. Surgical patients who have actually lost more than 10% of their customarily body weight, is failure to meet increased protein demand, muscle become weak and fatigue rapidly. There is failure to antibody production would have delayed wound healing and increased incidence of post operative complication. Significant weight loss is associated with both increased morbidity and mortality. There are studies that malnutrition is directly related with post operative complication³.

The post operative recovery from wound infection and other wound complications like wound dehiscence, burst abdomen etc are directly related to malnutrition. More over it causes prolong hospital stay than any non infected cases⁴. This prolongs hospital stay causes stagnant of patients in the hospital. So to improve the condition of health and national economy and to reduce the morbidity and mortality of post operative patients it is very much important to be aware of the nutritional status in surgical patients.

The importance of appropriate nutritional support in the management of surgical patients has been realized predominately with the last decade. Within that period of time consider only significant role of GIT in the prevention of bacterial translocation and maintenance of immune function being noted⁵.

With this background I had conduct this study in routinely admitted patients with written consent and nutritional assessment is based on information from the history, clinical examination, anthropometric measurement and some non invasive investigation. I think this study give idea about the relation of nutritional status of patient with post operative outcome.

More over there is no significant documented data about the role of nutrition on post operative recovery of abdominal surgery in our country. This study on “The influence of nutritional status on complication after major intra abdominal surgery” will create awareness about the importance of nutrition on operative outcome. So that necessary action can be taken to improve the nutritional status of these patients and thereby improve the post operative outcome.

Material and Methods

This is prospective descriptive study. The sample for the study constituted 100 randomly selected of major intra abdominal surgery which was admitted the surgical ward of SSMC & Mitford Hospital, Dhaka as a case of elective abdominal surgery. from May 2010 to October 2010 Case was selected as adult patient age over 12 years and excluded all patient of road traffic accident and emergency surgery . Nutritional Status dun by MAC, BMI and relevant investigation like serum Albumin, Lymphocyte count, HB%^{6,7}

Total duration of the study was from May 2010 to October2010.

Results:

A total number of 100 elective admitted major intra abdominal surgical patients were included in the study. Higher incidence was found among the nutritionally imbalance patient.

Following complication were found in this study pulmonary complication (pneumonia, Atelectasis), wound infection, Burst abdomen, Prolong hospital stay.

This findings statistically important that, highest number of subject was seen between the ages of 36 to 45 years. Male is more, Of the 100 cases, 71 (71%) were poor, 20 (20%) were average and 9 (9%) were rich. most of the female patients were housewives and male patients were mainly farmer. Smoker are more sufferer.

So analysis of BMI of male and female data shows (table-1) that average number of patients with normal nutrition is 46 (46%) & with malnutrition is 54 (54%). Out of 100 cases, 1 patients died post-operatively and 4 patients lost from follow-up

post-operatively. Among remaining 95 cases 43 were in normal nutrition and 52 cases were in malnutrition according to BMI standard. Out of 43 patients with normal nutrition 3 patients were pulmonary complication (6.98%) and out of 52 patients with malnutrition 8 patients were pulmonary complication (15.3%). The average rate of infection was 11%. (table-2)

Out of 43 patients with normal nutrition 3 patients were infected (7%) and out of 52 patients with malnutrition 9 patients were infected (17%). The average rate of infection was 12%. (table-4)

Out of 43 patients with normal nutrition only 1 patients developed burst abdomen, the rate was about 2.3% and out of 52 patients with malnutrition 3 patients developed burst abdomen post-operatively, and the rate was about 5.8%. The average rate of burst abdomen was 4.1%.

Among remaining 95 cases 12 cases developed wound infection and 4 cases developed burst abdomen 79 patients recovered without wound infection. Average length of hospital stay of 79 patients without wound infection was 7.5 days and that of 16 patients with wound infection was about 18.5 days post-operatively. Excess duration of hospital stay in malnourished group than the nutritionally sound group was about 11 days. (table-6)

Table-1: Showing BMI of Cases (Male & Female) (100 Case)

BMI	Number of Case male	Number of cases Female
<16	5(8.2%)	5(12.8%)
17.19	28(46%)	16(41%)
20-23	20(32.7%)	12(30.8%)
>23.1	8(13.1%)	6(15.4%)
	61	39

Table- 2: Result of Nutritional Status Assessment

Taking access to mid arm circumference, lymphocyte count, serum albumin & Body mass index, the following table will show the frequency of malnutrition.

Parameters	Level of nutrition (Normal) No. of cases	Level of nutrition (Malnutrition) No of cases	Number of Cases in each parameters
Body mass index BMI	46	54	100
Mid arm circumference	47	53	100
Lymphocyte count	52	48	100
Serum albumin	47	53	100
Hb%	43	57	100

Roughly we can conclude that 48-57% of our patients are malnourished.

Table-3: Spectrum of Surgical Procedure During Study

No	Procedure	No of cases	Male	Female
1	Surgery related to hepatobiliary system	24	9	15
2	surgery related to GIT	27	18	9
3	Surgery related to urology	15	14	1
4	Surgery related to neoplasia	30	17	13
5	Surgery related to others	4	3	1

Discussion:

In present study one hundred cases of elective surgical patients were consecutively selected from surgical in patient department of SSMC&MH, Dhaka Of the 100 cases 61 were male and 39 were female. Male to female ratio was 1:0.64. The present study showed age range from 13 to 70 years with mean age range 36- 45 years and highest number of cases were found.

Regarding socioeconomic condition 71 patients come from low socioeconomic, 20 patients from middle and rest from high socioeconomic condition. In series of cases personal habit was found that- 33% of patients were smoker, 2% alcoholic, 29% patients take betelnut, tobacco & rest of patients were none. About physical examination- About mid arm circumference in cases of male < 25 cm was found 38 cases & . 25cm in 23 cases and in female <23 cm was found in 15 cases and > 23 cm found in 24 cases. In my

studies out of 61 male patients about 38 patients were below average mid arm circumference and out of 39 female patients about 15 patients were below the average mid arm circumference. In this study it is comparatively more and, It may be due to low socioeconomic status of our country, lack of knowledge of nutrition and associated with parasitic infestation and chronic illness.

Regarding body weight of 100 cases body weight was ranged from 30-70kg and highest of cases were within 46-50 kg. About height of 100 cases <1.4 meter found in 3 cases (male 0 and female 3). Height 1.41-1.50 meter was found in 12 cases (Male 2 & female 10). Height 1.51-1.60 was found in 40 cases (male 19 & female 21). Height > 1.61 meter found in 45 cases (male 40 & female 5).

Regarding BMI, BMI < 16 found in male 5 cases, in case of male BMI 17-19 found hi 28 cases, which indicate undernourished, rest of the male 28 cases (out of 61) were normal. In female out of 39 cases BMI <16 found in 5 cases, BMI 17-19 found in 16 cases, which indicate undernourished, rest of the female 18 cases (out of 39) were normal. So total number of patients with normal nutrition was 46 and number of patients with malnutrition was 54. In study of H. Sungurtekin et al patient with malnutrition was 44%.⁸

The high body mass index of people in developed countries, their height and body weight, their access to nourishment etc are not comparable to those of people in our region of this globe. BMI variation may be due to geographical, racial and familial or genetic.

In study series of 100 cases serum albumin 2.1-2.7 gm/dl found in 12 cases (10 male & 2 female), which indicate moderate malnutrition and serum albumin 2.8-3.4 gm/dl were found in 41 cases (26 male & 15 female), which indicate mild malnutrition, Rest of the 47 cases (25 male & 22 female) are normal. Regarding lymphocyte count < 2% found in no cases, lymphocyte 8-12 % found in 3 cases, which indicate moderate malnutrition of which 2 cases were male and 1 case were female. Lymphocyte count found 12-20 % in 45 cases, of which 31 cases were male and 14 cases were female which indicate mild malnutrition, rest

52 cases 28 male and 24 female lymphocyte count were > 21% which indicate normal range.

In a study protein status of general surgical patients by Bruce R. Bistrai, Gergel, Blckburl, a study of surgical patients serum albumin found 2.8 -3.5 gm/100 ml, was 27 % which indicate moderate malnutrition. In our study it was about 41 % which indicate that patients are much more malnourished.

From the five indices of protein calorie malnutrition we have taken BMI, mid arm circumference, Hb% serum albumin, lymphocyte count, in consideration, each individual indicates malnutrition, but all five indices are not significantly correlated in our patients. Frequency of this value varies from 48-57%. There is no clinical standard for the diagnosis of malnutrition⁹.

To assess malnutrition we should measure mid arm circumference, BMI, serum albumin, lymphocyte count, triceps skin fold thickness, Hb%, transferin level, Immunoglobulin, dynamometric (e.g. hand grip strength) etc. But we had some limitations we gave more emphasis on mid arm circumference, BMI, Serum albumin, Hb% Lymphocyte Count.

In my study each patient was nutritionally evaluated whether in normal nutrition or in malnutrition and thus two groups of patients were found. One group was found malnourished and another group was found nutritionally sound. On the BMI standard the result of post operative recovery in terms of wound infection, burst abdomen and length in post-operative hospital stay were compared between the two groups. out of total 100 patients, hi the post-operative period 1 patients died and 4 patients lost from follow-up. Average duration of follow-up was 4 weeks. On BMI standard total 46 patients were nutritionally sound and 54 patients were malnourished. After death and patients lost from follow-up in post-operative period 43 patients with normal nutrition and 52 patients with malnutrition were under post-operative study.

The study reveals that the excess hospital stay due to wound infection was found about 11 days. This excess hospital stay causes a huge burden in health

care delivery system. economy. Not only creating this excess load on our economy, this prolonged hospital stay also creates patient jamming in the hospital, contributing to develop more wound infection-thus more and more morbidity and mortality.

My findings suggest that if attention is given to malnourished patient to improve their nutritional status, in the peri-operative period it may not only save a huge amount of extra cost but also may reduce morbidity and mortality rate in post-operative period.

Conclusion and recommendation:

Study reveals that there is significant number of surgical patients are suffering from different types of nutritional imbalance. The value of serum albumin determination as a measure significant protein deficit and BMI, mid arm circumference, lymphocyte count also reflects protein — calorie malnutrition. Malnutrition badly affects post-operative recovery causing more wound infection and many other post-operative complications contributing extra morbidity and mortality of the patients, prolongs post-operative hospital stay and incurs a huge extra cost to the health care delivery system. So, surgeons should be vigilant about this problem which is mostly underestimated. To reduce this complication, it should be aware the peoples by gathering nutritional knowledge and health education. This being a small series. A large multi-centre study should be done to assess the pre- operative nutritional status of surgical patients.

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