ORIGINAL ARTICLE

Effect of Malnutrition on Emergency Surgery

MUHAMMAD SAJID, SUMMAIRA HASSAN*, FARYAL WAHEED*

ABSTRACT

Aim: To determine the effects of pre-existing malnutrition on the overall outcome of surgery in emergency situation.

Methods: A cross sectional comparative analytical study was performed in emergency unit of tertiary care hospital, BVH, Bahawalpur from February 2009 to January 2010. An approval was taken from institutional review committee. One hundred malnourished (Cases) and 100 properly nourished (Control) were selected. Patients with BMI < 18.50 was labeled as malnourished and patients with BMI 18.50-24.99 was labeled as properly nourished.

Results: Malnourished patients were compared with properly nourished patients for post-operative chest infection. Out of 100 malnourished patients, 27(27%) had post-operative chest infection versus 14(14%) in properly nourished. Post-operative wound infection was observed in 29% of malnourished patients & 18% in properly nourished subjects. Mean hospital stay was also significantly longer in malnourished patients.

Conclusion: Malnutrition is an important risk factor for the occurrence of postoperative Complications.

Keywords: Malnutrition, post-operative chest complications, longer hospital stay.

INTRODUCTION

Malnutrition is defined as deviation from normal nutritional status with respect to age, sex, race and genetic make up[1]. Malnutrition is caused by multitude of factors, some of which are biological. Others are environmental, cultural or social[2]. There is no routine assessment done to determine the patient's nutritional status at the time of admission and at discharge which increase the morbidity and mortality both. In adult population, weight for age is the parameter commonly used to judge nutritional status. The body mass index (BMI) is commonly used for this purpose[3]. Nutritional status is an important determinant of out come after surgical treatment. It has been proved that malnutrition could result in poor wound healing, disruption of gut anastomosis, disturbed metabolism of drugs and poor tolerance against radiotherapy and chemotherapy[4]. It is recommended that in case of moderate to severe malnutrition, the surgical treatment should be withheld till nutritional status is improved to avoid delay in recovery[5]. This seemed logical but all data in its support was from Western literature. There was lack of data in local literature to address this important subject.

MATERIAL AND METHODS

A cross sectional comparative–analytical study was performed in emergency unit of tertiary care hospital, BVH, Bahawalpur from February 2009 to January 2010. An approval was taken from institiutional review committee. One hundred malnourished (Cases) and 100 properly nourished (Controls) were selected. Patients with BMI <18.50 was labeled as malnourished and patients with BMI 18.50-24.99 was labeled as properly nourished.

Inclusion criteria was: Malnourished and properly nourished patients presenting with acute appendicitis, obstructive hernia, peritonitis of <2 days duration and blunt or penetrating soft tissue injuries, both gender, age range from 15-60 years, all the patients requiring surgical procedure within 12 hours of their admission, For the purpose of uniformity, patient with ASA-1 and ASA-II are included and those patients who will be at least able to sit or stand on weight machine will be taken for study. Sick patients with ASA beyond 2, Patients with Diabetes Mellitus, Chronic debilitation disease (Chronic hepatitis B and C) and those who are immuno-compromised (AIDS or those on immune compromised drugs after an organ transplant) were excluded from the study.

Both groups underwent appendicectomy for acute appendicitis, inguinal herniotomy for obstructive hernia, laparotomy for peritonitis of less than 2 days duration and blunt or penetrating soft tissue injuries. Follow ups were started from the day of surgery to the day of discharge. Findings like chest infection, wound infection and hospital stay was entered on pre-designed Performa with demographic profile. All the data was entered in SPSS version 16 and analyzed.

Medical Officer, Department of Surgery, BVH, Bahawalpur
**Demonstrator, Department of Community Medicine, QMC, Bahawalpur*
Correspondence to: Dr.Muhammad Sajid, Medical Officer,

RESULTS

A total of 200 cases were included in the present study. (Table 1) Patients were divided into 2 groups, malnourished (100 cases); properly nourished (100 cases). Malnourished patients were compared with properly nourished patients for postoperative chest infection. Out of 100 malnourished patients 27(27%) had postoperative chest infection. 14(14%) properly nourished patients had postoperative chest Infection (Table 2). Our study revealed that there was a relationship between malnourishment & chest infection after surgery and this relationship was statistically found to be significant. Malnourished patients were compared with properly nourished patients for postoperative wound infection. It occurred in 29(29%) of malnourished patients & 18(18%) properly nourished patients (Table 3). It was noticed that there was a difference of frequency of wound infection in malnourished and properly nourished patients but it was statistically found to be insignificant. Mean hospital stay of malnourished patients was compared with that of properly nourished patients post operatively (Table 4). The difference was found to be highly significant.

Table 1: Distribution of patients included in the study.

	Malnourished	**Properly nourished**
Appendicitis	60	60
Peritonitis	20	20
Obstructive hernia	14	14
Injuries	6	6
Total	100	100

Table 2: Chest complications in relation to nutritional status

Nutrition Status	**Chest complication**		**Total**
	Yes	**No**	
Malnourished	27(27%)	73(73%)	100
Properly nourished	14(14%)	86(86%)	100
Total	41	159	200

Table 3: Wound infection in relation o nutritional status

Nutritional Status	**Wound infection**		**Total**
	Yes	**No**	
Malnourished	29(29%)	71(71%)	100
Properly nourished	18(18%)	82(82%)	100
Total	47	153	200

DISCUSSION

The importance of nutritional depletion as a major determinant of the development of postoperative complications has subsequently been confirmed by Giner *et al*[6]. No doubt exists in concerning the case effect relationship between malnutrition, morbidity & mortality based on the documentary evidence of Jewish doctor in Warsaw Ghetto during World War II[7]. Nutritional depletion is associated with changes in body composition, tissue wasting and impaired organ function, which leads to impaired immune and muscle function. Thus, depleted patients are at risk from infectious complications and cardio respiratory impairment[6]. My study revealed that the rate of pulmonary complication is higher in malnourished patients (27%) than in properly nourished patients (14%). These results are consistent with a prior study done in Brazil which shows that 28.2% patients with abnormal BMI undergoing emergency abdominal surgery develop post operative chest complications[8]. Recent studies showed that malnourished patients have reduced respiratory muscle strength and that nutritional intervention can return muscle ventilatory function to normal levels. Furthermore, it seems very likely that the ventilatory drive can be influenced by dietary intake of amino acids and glucose.

The structure of the pulmonary parenchyma can be affected by starvation and the pulmonary defense mechanisms are depressed in malnourished patients. The incidence of post-operative pneumonia or atelectasis is higher in protein-depleted patients as comparison with well-nourished patients[9]. Our study also revealed that malnutrition is associated with a longer hospital stay. These results are similar to a study done in the Republic of Ireland and Bridgeport Hospital, Connecticut, which shows that LOS was markedly prolonged in malnourished patients compared with those who were not[10].

This study may represent a stimulus for further studies aiming at evaluating the actual role of malnutrition in the development of postoperative complications in major abdominal surgery. Several criticisms of this study should be addressed. First, the group of patients was very heterogeneous, and it might have been preferable to study patients with one disease in detail. We deliberately studied this heterogeneous population because our aim was to study the relationship between nutritional status and complications in surgical patients. If a correlation could be shown in this population, it would have strengthened the need for treatment of malnutrition. Second, one might say malnutrition is not the cause of complication, but that both malnutrition and complications are the result of the underlying disease or other factors. Malnutrition and underlying disease are inextricably interwoven, and only in unusual circumstances, such as self-imposed malnutrition like anorexia nervosa, is malnutrition clearly separable from other disease. In fact, in a recent consensus report on nutrition support in clinical practice, it was concluded that all current nutrition assessment techniques are affected by illness and injury and that

their validity independently to measure nutritional risk has not been proven.

CONCLUSION

Preoperative malnutrition increases the morbidity rate and results in longer hospital stay of patients undergoing different surgical procedures.

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