



EFFECT OF HYPOALBUMINEMIA IN WOUND HEALING AND ITS RELATED COMPLICATIONS IN SURGICAL PATIENTS.

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ABSTRACT This prospective study used hypoalbuminemia as one of the indicator of nutritional status for patients who are admitted for elective or emergency surgery. It will be invaluable to have the predictors that can assess the complication before the operation procedure, so that deficit factors can be corrected in order to reduce wound healing complications (like wound infection, wound dehiscence and anastomotic leak). **AIM:** Effect of Hypoalbuminemia in wound healing and related complications in surgical patients. **MATERIAL AND METHODS:** This study conducted on patients admitted in surgery department of Dr. PDMMC & Hospital Amravati, for major elective or emergency surgery between 1Jan2021 to 30Aug2021 over 100 patients. **RESULT:** Patients with hypoalbuminemia are more tends to develop wound related complications than patients with normal albumin level. **CONCLUSION:** Serum albumin levels can be consider one of best predictor for wound related complication.

KEYWORDS : Hypoalbuminemia, wound complication, post operative complications.

INTRODUCTION

Many century ago, for the first time Hippocrates recongnized that number of patients admitted for surgery with hypoalbuminemia and malnutrition have more adverse effects on morbidity and mortality. Since then it is found that patients nutritional status and serum protein level plays a vital role in pre and post operative field, out of which serum albumin level is one of the best indicator of nutritional status. In presence of malnutrition and hypoalbuminemia surgical wounds, bedsore and anastomotic sites are more prone for complication and dehiscence.[1]

Normal serum albumin level is greater than 3.5g/dl suggest adequate protein stores. It confers a protective effect through several biological mechanisms in surgical patients.[2]

Half life of albumin is 20 days. It is long life as compared to other proteins. Albumin levels have been found to be better prognostic indicator than anthropometric measurements, because its ability to detect protein energy malnutrition, which is not necessarily accompanied by lower body weight and may not clinically recognizable but is associated with significantly increased morbidity and mortality. Their occurs significant down regulation of 50% to 70% of proteins with a longer half life such as albumin during the phase of acute stress response to injury. Serum albumin level independently associated increased risk of developing serious complications within 30 days of surgery.[3]

Aim And Objectives:

To study effect of protein level and wound healing and related complications like wound infection, wound dehiscence and anastomotic leak.

MATERIALS AND METHODS

Source of data: Patients admitted in surgery department of Dr. PDMMC & Hospital Amravati, for major elective or emergency surgery between 1Jan 2021 to 30Aug 2021.

Calculated sample size: n=100

INCLUSION CRITERIA: Patients who are admitted for any elective or emergency surgery under surgery department, Dr. PDMMC & hospital Amravati.

EXCLUSION CRITERIA: Patients having chronic kidney disease, chronic liver disease, patients with irritable bowel syndrome, immunosuppressant status and with autoimmune disease.

Method Of Collection Of Data:

- 1) Details of cases were recorded including history and clinical examination.
- 2) All necessary preoperative blood investigations had done.
- 3) Serum albumin was estimated on the day of admission and on 5th, 10th, 15th post operative days.
- 4) Wound related complications were monitored with respect to surgical site infection, wound dehiscence, anastomotic leak, mortality if any.

Statistical Analysed: The data was analysed by Z test. P value of <0.05 was considered statistically significant.

RESULT:

The study conducted on 100 patients, who underwent any major elective or emergency surgery in DR PDMMC And Hospital Amravati from January 2021 to August 2021. Among the 100 patients, 47 patients were having serum albumin levels more than 3.5g/dl and 53 patients were having serum albumin less 3.5g/dl. Among 47 patients were having serum albumin levels more than 3.5g/dl, 4 patient develops wound related complication.

Table 1: Sex Distribution.

S Sex	N Number	Percentage(%)
M Male	52	52%
Female	48	48%

Table 2: Age Distribution.

Age in Years	Total Number
<10	33
1 11-20	13
21 21-30	17
31 31-40	25
41 41-50	20
5 51-60	14
6 61-70	66
>70	2
Total	100

Table 3: Post operative Outcome.

	Patients with serum albumin level >3.5g/dl	Patients with serum albumin level <3.5g/dl
Wound Infection	04	24
Wound Dehiscence	00	04
Anastomosis Leak	00	02



Picture1: Showing Anastomosis Leak.



Picture2: Showing wound infection and wound gap.

DISCUSSION:

Nutritional assessment is essential for identifying patients who are at increased risk of developing post operative complications. A variety of nutritional indices have been found to be valuable in predicting patient outcome. In our study preoperative serum albumin level was used for nutritional assessment. Serum Albumin level less than 3g/dl was associated with increased postoperative morbidity and mortality according to studies done by Vincent et al, Golub et al, Wojtsiak et al, Brown et al and Mullen et al.

Our study shows similar results patients with Serum Albumin less than 3g/dl had more postoperative complications. Gibbs et al observed that a decrease in serum albumin from concentration greater than 4.6 g/dl to less than 2.1g/dl was associated with an exponential increase in morbidity and mortality and that it was a good prognostic indicator.

Nagachinta et al also found an association between s.albumin less than 3.9 g/dl and wound infection. According to Foley et al postoperative complication rate was higher when albumin was lower than 2.5 g/dl. In our study of 100 patients, 47 patients had serum albumin of more than 3.5grams/dl. In this group the complications rates were significantly low. Only 4 patients developed complications.All 4 had wound

infection. Where as in the other group 30 patients developed wound related complications. 24 patients had wound infection, 4 patients had wound dehiscence and 2 patients had anastomotic leak. The infection rate further increases as the protein levels decreases. Of 30 patients with complications, 20 patients had serum albumin levels were less than 3.5 g/dl. Further the in hospital stay, the cost of the treatment and morbidity, absence from work were high. In contrast to the above mentioned studies and our study, Ryan JA reported that there was no significant difference in wound infection rates with serum albumin greater than 3.4, 2.8-3.4 or less than 2.8 g/dl. Gherini et al showed that serum albumin values could not predict postoperative complications. Engelman et al observed that albumin less than 2.5 g/dl and BMI less than 20 kg/m² and greater than 30 kg/m² was associated with increased post operative complications. Joshi et al reported that post operative mortality was higher when serum albumin was less than 3.2g/dl and BMI less 20 kg/m²(p<0.05). Mullen et al reported that in the postoperative period being underweight was associated with increased mortality and obese individuals had more wound complications.

CONCLUSION:

Our study shows that serum albumin is a good indicator of post operative complications. The rate of complications were significantly high in patients with serum albumin less than 3.5g/dl and significant difference was found as compared to the patients with serum albumin levels more than 3.5g/dl. Thus serum albumin is a good prognostic indicator because of its ability to detect protein- energy malnutrition, which is not necessarily accompanied by lower body weight and may not be clinically recognizable, but is associated with significantly increased risk of morbidity and mortality.

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