



Original Research Article

Studying the co-relation of preoperative serum albumin levels in emergency surgeries with rate of postoperative wound site infection

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ABSTRACT

Aims: Hypoalbuminemia is a good marker of malnutrition. The objective is to analyze and correlate the rates of wound site infection in patient undergoing emergency surgery with preoperative serum albumin levels.

Materials and Methods: A prospective study of 98 patients who underwent emergency surgery between January 2021 to June 2021 in the Department of General Surgery, Tezpur medical college and hospital, Assam were considered for the study.

Serum albumin was determined preoperatively in all patients. Hypoalbuminemia was defined as serum albumin level of less than 3g/dl. Thirty day postoperative complication were analyzed. Wound site infection was confirmed by either by purulent discharge from the wound site or organism identified by aseptically obtained specimen from the superficial incision or from subcutaneous tissue by a culture based microbiological testing.

Results: A total of 98 patients who underwent emergency surgeries were studied. Out of 98 patients, 49 patients had normal Serum albumin levels and 49 patients had albumin levels of less than 3g/dl were included in the hypoalbuminemic group. Overall in the group of normal serum albumin level (n=49), patient with wound site infection were (n= 04) and patient without wound site infections were (n=45). In the group with level of albumin less than 3g/dl (n=49), patient with wound site infections (n=39), without wound site infections (n=10). After a chi-square test analysis with yates correction is 47.90.

Conclusions: Preoperative hypoalbuminemia is an independent risk factor and a predictor of postoperative wound site infections in patients undergoing emergency surgery. Identification and optimization of nutritional status prior to surgery may improve surgical outcomes

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1. Introduction

In a surgical patient, Malnutrition manifest most prominently as immunosuppression (an wound site infection and delayed wound healing.¹ Serum Albumin levels are useful in detecting and quantifying malnutrition.¹ Complication are defined as any deviation from the normal postoperative course.² It has been mentioned that

hypoalbuminemia is associated with higher rates of post-operative complication.^{3–5} Preoperative albumin levels of less than 3 g/dl is independently associated with an increased risk of developing serious complication within 30 days of surgery. Our Aim is to study the co-relation between preoperative albumin levels and post-operative wound site infection in patient undergoing emergency surgeries.

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2. Materials and Methods

This was a prospective study carried out from the period of January 2021–June 2021 in the Department of General Surgery in Tezpur Medical College and Hospital, Tezpur, Assam, A tertiary care hospital. All patients undergoing emergency surgeries were included in study and was studied for a postoperative period of 30 days. Patients less than 8 years of age, With hemoglobin less than 8g/dl and patients with Acute renal failure and People who lost follow up were excluded from study. Preoperative serum albumin was recorded for patient undergoing emergency surgeries.

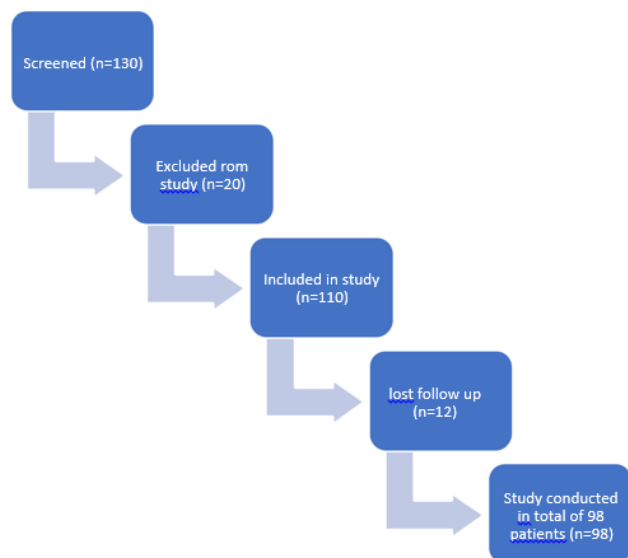


Fig. 1: Work plan or the study

For the study patient were classified into two groups- Patients with normal serum albumin levels and Patients with low serum albumin levels in correlation with preoperative serum albumin levels (normal >3.0g/dl, Hypoalbuminemia <3.0g/dl). Patients demographic details, history, clinical findings, blood investigation and radiological investigations was done and were recorded. All patients were followed up or a period or 30 days. Patient were done regular dressing and was followed up for any complication.

The number of patients with wound site infection in both groups with hypoalbuminemia and normal albumin levels were studied using chi square test. All the data were analyzed using SPSS version 18. Wound site infection was confirmed by either purulent discharge from the wound site or organism identified by aseptically obtained specimen from the superficial incision or from subcutaneous tissue by a culture based microbiological testing.

3. Results

A total of 98 patients who underwent emergency surgeries were studied. Out of 98 patients, 49 patients had normal

Serum albumin levels and 49 patients had albumin levels of less than 3g/dl and were included in the hypoalbuminemic group.

Distribution of emergency surgeries done

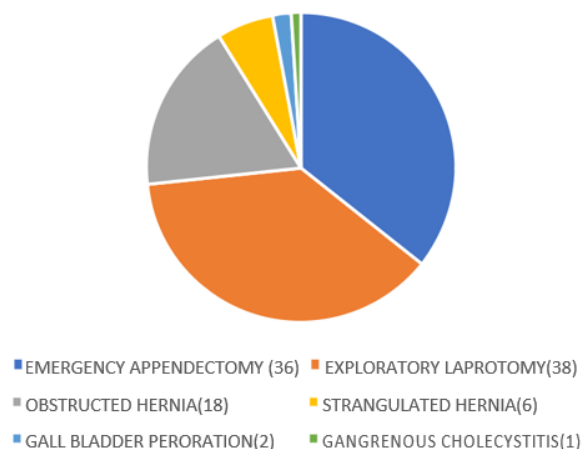


Fig. 2: Distribution of emergency surgeries done

Overall in the group of normal serum albumin level (n=49), patient with wound site infection were (n= 04) and patient without wound site infections were (n=45). In the group with level of albumin less than 3g/dl (n=49), patient with wound site infections

(n=39) patient without wound site infections (n=10). The chi-square statistic with Yates correction is 47.9019. The

P value is < 0.00001. Significant at $p < .05$. The relationship between hypoalbuminemia and the wound site infection was found to be statistically significant. The wound site infection is more likely to occur when there is hypoalbuminemia than when serum albumin is normal.

4. Discussion

Complication After any surgery are inherent. Though it can be minimized it can never be eliminated. Many studies have shown that low preoperative serum albumin is a risk factor for postoperative complications.⁴⁻¹² In the present study we have established that Low serum albumin levels preoperatively is a very important risk actor for wound site infection in post operative period. When we compared the rates of wound site infection among the hypo-albuminemic group and individuals with normal serum albumin levels undergoing emergency surgery, the rates of wound site infection was statistically significant ($p < 0.05$). Low serum albumin is associated with poor wound healing, compromised collagen synthesis and a compromised immune response. The elements collectively may clarify the higher risk of wound site infection in hypoalbuminemic patients.

Concerning the treatment of preexisting low serum albumin levels few studies have shown no beneficial outcome with the administration of albumin infusion.^{13–15} This could be due to inadequate albumin replacement or increased leakage of synthetic albumin into extravascular spaces. However, recently some study highlighted that preoperative nutrition supplements may benefit the patients and improve surgical outcomes.^{16,17} We believe that this one of the precise series clearly showing an association between preoperative serum albumin and significant wound site infection after emergency surgery. Limitation of our study are; Single centered study design, small size study population, which could influence the ability to determine preoperative serum albumin as a predictor: Serum albumin which itself is a multifaceted variable which could be altered broadly in various physiopathological condition. Despite all the limitations, Preoperative serum albumin remained a significant predictor of post operative complications and mortality in patients undergoing emergency surgery. Hence to validate our findings further appropriately design studies are suggested.

5. Conclusion

Preoperative hypoalbuminemia is an independent risk factor for the development of low postoperative complication. Surgeon should be aware of the consequences of low preoperative serum albumin and concerns on nutritional optimisation which is likely to increase the postoperative outcome

6. Source of Funding

None.

7. Conflict of Interest

None.

8. Acknowledgement

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