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Albumin as prognostic value in operated patients in the department of obstetrics and gynaecology

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Abstract

Background:

In post - surgical state there might be a low formation of the albumin in liver or high degradation of the albumin. In either of the ways the serum albumin will be lowered. Stress and strain is also known to cause hypoalbuminemia i.e low serum level of albumin. Since albumin is a protein it has to be transcribed from the genes and studies have shown that TNF - alpha suppresses this transcription process. This study is intended to help the practising obstetricians to understand and intervene in the event and thus help the patient to recover earlier and in a better way.

Keywords: Albumin, prognosis, Hospitalized, Surgery, Patients

Introduction

In post - surgical state there might be a low formation of the albumin in liver or high degradation of the albumin. In either of the ways the serum albumin will be lowered. Stress and strain is also known to cause hypoalbuminemia i.e low serum level of albumin. Since albumin is a protein it has to be transcribed from the genes and studies have shown that TNF - alpha suppresses this transcription process. The TNF - alpha is known to increase in any inflammation and thus forms a cascade. In case of hospitalised patients the stress and strain in pre surgical patients and chronically hospitalised patients the serum albumin levels are known to be less than normal. In chronically hospitalised patients the nutritional cause can also be taken into consideration for lower serum albumin levels. Early detection of these low levels of serum albumin levels helps the surgeons and the physicians to intervene and thus cut off the progression of the disease. A sincere effort has been made in this study to understand the relations of the serum albumin level and its effects on the prognosis of the disease and outcome of the surgery if the patient is undergoing any. This study is intended to help the physician, surgeon and general practitioners to understand and intervene in the event and thus help the patient to recover earlier and in a better way.

Aims and Objectives

1. To estimate the mean serum albumin levels in hospitalised patients.
2. To estimate the mean serum albumin levels in patients undergoing surgery.
3. To correlate the serum albumin levels and the prognosis of the patient.

Methods

The study has been done in the Department of OBG, Srinivas Institute of Medical Sciences, Mangalore.

The study was done from Jan 2017 To Jan 2019.

The study is a cross - sectional study. The study is also double blinded and randomised. The study is a multi - level study. The sample size included one hundred patients. One hundred thirty six patients were identified in the department of surgery.

The serum albumin levels were estimated. In chronically hospitalised patients the patients were divided into three groups

1. Serum levels less than 2 gm / Dl
2. Serum levels between 2 g/ dl and 5 gm / Dl
3. Serum levels more than 5 gm / Dl

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The serum albumin levels were again estimated and the prognosis was checked in the form of non - wound healing, pain, worsening of symptoms, intra surgical complications, post - operative sepsis and death.

In each group the necessary treatment was given in the form of nutrition supplementation and was observed for the prognosis. The serum albumin levels were again estimated and the prognosis was checked in the form of non - wound healing, pain, worsening of symptoms and death.

Inclusion Criteria

1. The patients were aged between 20 to 40 years. This was done in order to minimize the age related bias.

Exclusion Criteria

1. Patients who were on drugs which were known to cause low serum albumin.
2. Chronic liver disease.

Results:

Table 1: Frequency of patients in each of the divided groups.

Serum Albumin Level	Number of Patients
Group 1 (<2 gm / Dl)	39
Group 2 (2 - 5 gm / Dl)	41
Group 3 (> 5 gm / Dl)	56

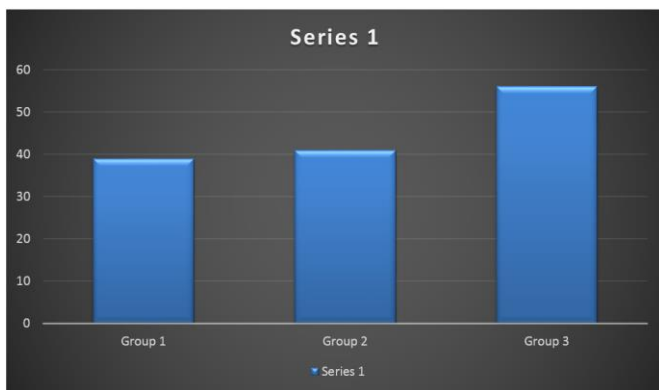


Fig 1: Frequency of Patients.

Table 2: Mean Serum Albumin Level in each of the divided groups.

Serum Albumin Level	Mean Serum Albumin Level
Group 1 (<2 gm / Dl)	1.74 gm / Dl
Group 2 (2 - 5 gm / Dl)	3.98 gm / Dl
Group 3 (> 5 gm / Dl)	5.23 gm / Dl

Table 3: Prognosis table correlation to the serum albumin levels.

Serum Albumin Level	Prognosis
Group 1 (<2 gm / Dl)	Non Healing wounds: 31 Pain: 38 Worsening of symptoms: 17 Intra surgical complications: 37 Post - operative sepsis: 1 Death: 1
Group 2 (2 - 5 gm / Dl)	Non Healing wounds: 07 Pain: 21 Worsening of symptoms: 02 Intra surgical complications: 09 Post - operative sepsis: 01 Death: Nil
Group 3 (> 5 gm / Dl)	All Patients were posted for surgery and were surgically treated without any significant side effects.

Table 4: Serum Albumin levels in Post corrected patients after fifteen days of treatment.

Serum Albumin Level	Mean Serum Albumin Level
Group 1 (<2 gm / Dl)	3.01 gm / Dl
Group 2 (2 - 5 gm / Dl)	4.81 gm / Dl

Table 5: Prognosis in post corrected patients

Serum Albumin Level	Prognosis
Group 1 (<2 gm / Dl)	Non Healing wounds: 01 Pain: 02 Worsening of symptoms: 02 Death: Nil
Group 2 (2 - 5 gm / Dl)	Non Healing wounds: Nil Pain: 01 Worsening of symptoms: Nil Death: Nil

Table 6: Table of Significance.

Serum Albumin Level	Significance
Group 1 (<2 gm / Dl)	Non Healing wounds: Significant (<0.05 2 tailed) Pain: 05 (<0.05 2 tailed) Worsening of symptoms: 02 (<0.05 2 tailed) Death: Nil (<0.05 2 tailed)
Group 2 (2 - 5 gm / Dl)	Non Healing wounds: Nil (<0.05 2 tailed) Pain: 01 (<0.05 2 tailed) Worsening of symptoms: Nil (<0.05 2 tailed) Death: Nil (Not Significant).

Discussion

The Human liver produces around fifteen grams of albumin per day under normal conditions. The human body is known to degrade about 0.5 to 0.6 grams of total body albumin in a normal adult human being. Around fifty six percent of the total protein in the body is albumin. Before further discussion of the albumin levels in a human body which is under a lot of stress and strain due to pathophysiological processes which has been mentioned in a handful of articles the albumin as a biochemical agent should be checked in brief. Albumin by far is the most abundant protein in the human body and as explained earlier majority of them is produced in the liver. Albumin is a simple protein as it contains only amino - acids and do not contain anything else like metals which influences the function of some proteins. The half - life of the protein albumin is around twenty one days that means around half of the total produced albumin in liver in a single day will be degraded in twenty one days. It has a lot of important physiological functions. Biochemically the albumin coagulates on heating, it is easily soluble in water and it contains a net negative charge. Due to these properties there are many physiological functions that are carried out by this amazing protein. The normal serum level that is found in the normal adult is around three to five grams per decilitre. Anything below two grams per decilitre is considered to be low. In cases of a pathological state there might be a low formation of the albumin in liver or high degradation of the albumin. In either of the ways the serum albumin will be lowered [1]. Stress and strain is also known to cause hypoalbuminemia i.e low serum level of albumin [2, 3]. Since albumin is a protein it has to be transcribed from the genes and studies have shown that TNF - alpha suppresses this transcription process [4, 5, 6]. The TNF - alpha is known to increase in any inflammation and thus forms a cascade. In case of hospitalised patients the stress and strain in pre surgical patients and chronically hospitalised patients the serum albumin levels are known to be less than normal. In chronically hospitalised patients the nutritional cause can also be

taken into consideration for lower serum albumin levels. Early detection of these low levels of serum albumin levels helps the surgeons and the physicians to intervene and thus cut off the progression of the disease [7-11]. A sincere effort has been made in this study to understand the relations of the serum albumin level and its effects on the prognosis of the disease and outcome of the surgery if the patient is undergoing any. This study is intended to help the physician, surgeon and general practitioners to understand and intervene in the event and thus help the patient to recover earlier and in a better way.

Conclusion

In the present study there is a significant difference in the prognosis of the patients when the serum albumin level increases in the serum. The mean serum levels in the three groups were found to be 1.95 gm / dl, 2.85 gm / dl and 5.1 gm / dl. In the third group the complications were not present at all, showing the significance of serum albumin levels in the prognosis and outcome of the disease. The disease prognosis was significantly altered when the low serum albumin was altered.

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