Section: Medicine

Original Research Article

SERIAL SERUM ALBUMIN & OTHER LIVER PARAMETERS MONITORING AS A PROGNOSTIC MARKER IN PATIENTS WITH SEPSIS

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Abstract

Background: Sepsis is a life-threatening medical condition that has seen an increase in global occurrence. It is characterized by a systemic and uncontrolled host response to infection, with symptoms ranging from mild to severe. Septic shock remains a leading cause of death in intensive care units, highlighting the need for effective treatment strategies. Serial monitoring of serum albumin and liver parameters can provide valuable insights into the patient's response to treatment and prognosis. **Materials and Methods:** A prospective observational study was conducted at Darbhanga Medical College & Hospital to investigate the significance of serum albumin as a prognostic marker in sepsis patients. The study included 100 patients selected through simple random sampling. Statistical analysis using SPSS software was performed, including descriptive statistics, t-tests, and chi-square tests. Serial serum albumin and liver measures such as SGOT, SGPT, INR, and TOTAL BILIRUBIN monitoring on Days 1, 3, 6 and 9. **Results:** The minimum and maximum amounts of serum albumin were 2.9 g/dl and 5.5 g/dl, respectively. The levels of total bilirubin showed similar trends, with mean SD values ranging from 1.17 ± 0.27 to 1.57 ± 0.56 from day 1 to day 9 respectively. The median SD of SGOT levels was also measured, and the range of the SD was 41.01 ±13.07, with the minimum and maximum values being 22 and 76, respectively. In contrast to serum albumin, SGOT levels increased on day 9 and ranged between 32 and 100, respectively. SGPT and INR levels also increased from day 1 to day 9, with mean standard deviation increases of 42.79 ±12.31 to 52.95 ±15.98 and 1.25 ±0.37 to 1.66 ±0.64, respectively. **Conclusion:** Sepsis poses a significant healthcare burden globally, with high morbidity and mortality. Timely diagnosis is challenging due to the lack of reliable diagnostic tools. Early goal-directed therapy improves outcomes. Serum albumin, despite limitations, remains widely used. It serves as a predictor in elective surgery and correlates with clinical outcomes and liver parameters in sepsis. Serial monitoring of albumin and liver indicators yields valuable insights into mortality, morbidity, and hospital stays in sepsis patients.

INTRODUCTION

Since the dawn of time, sepsis has been a serious medical illness that puts human life in danger. In recent decades, it has been discovered that the occurrence of this clinical illness has increased globally.[1,2] A systemic and improperly controlled host reaction to an infection is the hallmark of the illness spectrum known as sepsis. The symptoms could be vague or non-localizing, or they could be severe and show signs of septic shock and multiple organ dysfunction.[3] Sepsis was originally described as a systemic inflammatory reaction to infection, with the caveat that numerous noninfectious factors could also produce a comparable reaction.[4] In 2001, a second consensus panel added more characteristics for organ failure to the list of factors used to define sepsis.[5] In cases of severe sepsis, prognostication may help with aggressive patient group care. Age, sex, comorbidities, biomarkers (such as C-reactive protein [CRP], procalcitonin, etc.), and severity of illness score (such as the Acute Physiology and Chronic Health Evaluation [APACHE]), among others, have all been reported to be prognostic factors that are related to the outcome in cases of severe sepsis.[6,7]

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According to data from the Western world, 8.2 out of every 100 intensive care hospitalizations result in septic shock, with a death rate of 55–62.1%. Despite conventional therapeutic options and efficient antibiotic therapy, septic shock still ranks as the most prevalent cause of death in the intensive care unit (ICU), with a mortality rate of 30–50%.[8,9] This highlights the need for greater investigation into the early goal-directed and more focused therapy used to treat septic shock. The American College of Chest Physicians/Society of Critical Care Medicine (ACCP/SCCM) classification.[4], which has been in use for more than ten years, grades the severity of sepsis into three groups of increasing severity: severe sepsis, septic shock, and sepsis, the combination of infection and systemic inflammatory response, or SIRS.[10] Even though the criteria identifying the groups have been slightly altered throughout studies, this classification has proved beneficial in epidemiologic studies or clinical trials while being relatively subjective.[11,12]

Sepsis, according to HIPPOCRATES (c. 400 BC), is characterized by festering wounds and decaying flesh. Galen (129–199 AD) characterized sepsis as a praiseworthy occurrence necessary for wound healing several decades later. Sepsis was reclassified as a systemic infection known as "BLOOD POISONING" once the germ theory was put forth in the 19th century by SEMMELWEIS, PASTEUR, and others. It was believed to be caused by pathogen invasion and dissemination in the host's bloodstream. Although the triggering infection had been successfully eliminated, the germ theory could not fully explain sepsis because many septic patients died. Sepsis was described as a systemic inflammatory response to infection by BONE AND COLLEAGUES.

In order to estimate the risk of mortality and morbidity in such patients in our scenario of a resource-constrained situation, a good, simple, efficient, and cost-effective indicator is needed. Accordingly, serum albumin appears to be a trustworthy prognostic indication in a variety of situations that is easy to perform, takes little time, and is readily available. Because albumin is an acute phase reactant, its concentration frequently drops sharply early in the course of sickness and frequently does not rise until the beginning of the recovery phase.[17]Increased mortality, longer hospital stays, and complications are linked to hypoalbuminemia.[18-20]

There is a need for a strong, cost-effective indicator to forecast the risk of death and morbidity in the context of India, where there are few competent critical care facilities, a poor doctor-to-patient ratio, and a lack of financial resources. Estimating serum albumin levels in critically ill patients may serve as a useful prognostic indicator, enabling treating medical professionals to spot individuals at high risk at the earliest stages of illness severity and to treat them promptly to improve their prognosis.[18] A helpful indicator of nutritional status is serum albumin (Amit and Khilnani, 2007). Albumin not only determines osmotic pressure and is a negative acute phase protein, but it also reflects a person's nutritional state. Estimating successive albumin levels will rationally demonstrate how successfully physiology is battling disease in this way.

Therefore, after an acute inflammatory insult like sepsis, serum Albumin, a Negative Acute Phase Reactant, drops and other liver markers increase.[21] It is a frequent finding in critically ill patients, where it has shown promise as a predictor of mortality, morbidity, and length of hospital stays in addition to organ failure and the need for ionotropes. In order to predict mortality, morbidity, ventilator support needs, and the need for ionotropes in sepsis patients, this study aims to investigate the utility of serial serum Albumin and other liver parameter monitoring.

In order to estimate the risk of mortality and morbidity in such patients in our scenario of a resource-constrained situation, a good, simple, efficient, and cost-effective indicator is needed. Accordingly, serum albumin appears to be a trustworthy prognostic indication in a variety of situations that is easy to perform, takes little time, and is readily available. Because albumin is an acute phase reactant, its concentration frequently drops sharply early in the course of sickness and frequently does not rise until the beginning of the recovery phase.[17] Increased mortality, longer hospital stays, and complications are linked to hypoalbuminemia.[18-20]

MATERIALS AND METHODS

Source of Data

The study was conducted on patients admitted in Department of Medicine, Darbhanga Medical College & Hospital Laheriasarai, with fulfillment of inclusion and exclusion criteria were included to study significance of Serum albumin as a prognostic marker in patients with sepsis.

Method of Study

- Study design: Prospective, Observational study.
- Sample size: 100
- Sample method: Simple random sampling.
- Duration of study: 12 months.
- Method of collection of specimens and processing:

Patients blood samples was collected on day of admission and serum was separated by centrifugation, and then serum Albumin, SGOT, SGPT, Total Bilirubin, PT, INR were monitored serially on day 1,3,6,9.

The tests were conducted by using Bromocresol Green method on auto-analyser for Albumin & LFT by DIAZO method.

Inclusion Criteria

All sepsis patients with age >13 years were admitted to Darbhanga Medical College & Hospital Laheriasarai.

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Exclusion Criteria

- Patients who will deny formal consent.
- Chronic malnutrition.
- Chronic liver disease.
- Nephrotic syndrome.
- Protein losing enteropathy.
- Consent: Individual written and informed consent.
- Investigations:
- Complete blood coumt.
- Blood urea
- Serum creatinine
- Serum electrolytes
- Random blood sugar
- Liver function test. PT, INR.
- Fasting blood sugar
- Post prandial blood sugar
- Urine culture sensitivity
- Blood culture sensitivity
- Sputum culture sensitivity (if needed)
- Artrial blood gas analysis
- Chest X ray
- ECG/USGKUB/ Abdomen (if needed)
- CSF analysis (in suspected meningitis)

Analysis

Data were collected and entered in Performa meeting the objectives of the study. Detailed history, physical examination and necessary investigation was undertaken. The purpose of the study was explained to the patient and informed consent were obtained on the basis of the aim of the study. Patients were followed up during the course of the hospital stay and the outcomes of the patient (i.e.death/survival) were recorded. All data collected was analyzed statistically.

Statistical Analysis

Statistical analysis will be performed with IBM SPSS version 16(SPSS Inc., Chicago, IL). Descriptive statistics will be computed; data will be tested for normality using Shapiro wilks normality test. Since the data levels will be normally distributed, hence serial LFT and serum albumin among survivors and non survivors will be compared using independent student t-test. The confidence interval will be set at 95%. Chi square test or Fisher's Exact Test will be used to compare categorical variables.

RESULTS

Age Distribution

Among the total 100 sepsis patients (Table 1), the total number of patients who survived under the age group of 20 years were (3) 100%, under which no patient died. Similarly, 61.5% patients' survived patients under the age group of 21-40 years, while 38.46% patients did not survive. In the age group of patients from 41-60 years, 62.5% patients survived while 37.5% not survived. Among the total 25 patients in age group of 61-80 years, 76% patients survived and 24% did not survived. Similarly, total 3 patients over the age of 80 years, 2 patients survived while 1 patient did not survive. Figure 1 demonstrating the age based distribution of sepsis patients among survivors and non survivors.

Gender based distribution and analysis

In this study out of 100 patients 67 were female as compared to 33 male patients as shown in Table 2. Among the 33 Non Survivors patients, 21 were female and 12 were male patients. Similarly, patients among the total 67 Survivors, 46 were female and 21 were male patients. Charts representing in Figure 2 showing survival and non survival rate in male and female.

Serum Albumin

Serum albumin levels were studied from day 1 to day 9 in two groups of survivors and non survivor patients suffering from sepsis (Table 3). The statistical analysis involved standard deviation mean value with standard error mean. P value was also calculated for the statistical significant correlation between the patients including survivors and non survivors. The standard error mean for the survivors were calculated to be 0.074, 0.055, 0.057 and 0.075 on day 1, day 3, day 6 and day 9 respectively. Similarly, the standard error mean for the non survivors were also calculated to be 0.079, 0.072, 0.063 and 0.062 on day 1, day 3, day 6 and day 9 respectively. The p value of serum albumin levels were done by Unpaired student t test; (* $p< 0.05$ shows statistically significant). Graph depicting mean values of the serum albumin levels from day 1 to day 9 are showed in Figure 3.

SGOT

SGOT levels were studied from day 1 to day 9 in two groups of survivors and non survivor patients suffering from sepsis (Table 4). The statistical analysis involved standard deviation mean value with standard error mean. P value was also calculated for the statistically significant correlation between the patients including survivors and non survivors. The standard error mean for the survivors were calculated to be 1.40, 1.34, 1.47 and 1.73 on day 1, day 3, day 6 and day 9 respectively. Similarly, the standard error mean for the non survivors were also calculated to be 2.39, 2.44, 2.80 and 2.85 on day 1, day 3, day 6 and day 9 respectively. The p value of SGOT levels were done by Unpaired student t test; (* $p< 0.05$ shows statistically significant). Graph depicting mean values of the SGOT levels from day 1 to day 9 are showed in figure 4.

SGPT

SGPT levels were studied from day 1 to day 9 in two groups of survivors and non survivor patients suffering from sepsis (Table 5). The statistical analysis involved standard deviation mean value with standard error mean. P value was also calculated for the statistically significant correlation between the patients including survivors and non survivors. The standard error mean for the survivors were calculated to be 1.36, 1.34, 1.57 and 1.77 on

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day 1, day 3, day 6 and day 9 respectively. Similarly, the standard error mean for the non survivors were also calculated to be 2.13, 2.24, 2.49 and 3.06 on day 1, day 3, day 6 and day 9 respectively. The p value of SGPT levels were done by Unpaired student t test; (* p< 0.05 shows statistically significant). Graph depicting mean values of the SGPT levels from day 1 to day 9 are showed in figure 5.

TB

TB levels were studied from day 1 to day 9 in two groups of survivors and non survivor patients suffering from sepsis (Table 6). The statistical analysis involved standard deviation mean value with standard error mean. P value was also calculated for the statistically significant correlation between the patients including survivors and non survivors. The standard error mean for the survivors were calculated to be 0.034, 0.036, 0.044 and 0.057 on day 1, day 3, day 6 and day 9 respectively. Similarly, the standard error mean for the non survivors were also calculated to be 0.044, 0.060, 0.074 and 0.094 on day 1, day 3, day 6 and day 9 respectively. The p value of TB levels was done by Unpaired student t test; (*p< 0.05 shows statistically significant). Graph depicting mean values of the TB levels from day 1 to day 9 are showed in figure 6.

INR

INR levels were studied from day 1 to day 9 in two groups of survivors and non survivor patients suffering from sepsis (Table 7). The statistical analysis involved standard deviation mean value with standard error mean. P value was also calculated for the statistically significant correlation between the patients including survivors and non survivors. The standard error mean for the survivors were calculated to be 0.043, 0.050, 0.061 and 0.074 on day 1, day 3, day 6 and day 9 respectively. Similarly, the standard error mean for the non survivors were also calculated to be 0.07, 0.06, 0.07 and 0.09 on day 1, day 3, day 6 and day 9 respectively. The p value of INR levels were done by Unpaired student t test; (* p< 0.05 shows statistically significant). Graph depicting mean values of the INR levels from day 1 to day 9 are showed in figure 7.

Mechanical ventilation requirement

Out of all 100 patients in this study, requirement for mechanical ventilators was studied in survivors and non survivor group of patients. Based on the mechanical ventilators requirements in non survivors i.e., 20 patients required mechanical ventilators, while 13 patients did not required mechanical ventilators. However, only 5 patients required mechanical ventilators while 62 patients did not require any ventilator in the survivor group as depicted in Figure 8.

Ionotropes requirement

Out of all 100 patients in this study, dosage of requirement for Ionotropes were studied in survivors and non survivor group of patients. Based on the Ionotropes requirements all non survivors i.e., total 33 patients required Ionotropes dosage. However, 31 patients required Ionotrope dosage while 36 patients did not require any dosage of same in the survivor group as depicted in Figure 9.

Co-morbidity

Out of all 100 patients in this study, comorbidity related to type 2 diabetes mellitus (T2DM) was studied in survivors and non survivor group of patients. Based on this, T2DM was observed 19 in non survivors patients while 14 patients did not have T2DM. However, 37 patients were diagnosed with T2DM while 60 patients did not have T2DM in the survivor group as depicted in Figure 10.

Logistic regression for independent factor in mortality: Table 8 shows results of univariate and bivariate logistic regression analyses comparing patients for predictor factor in mortality. The overall logistic regression model was statistically significant (p <0.05), indicating that the predictor variables included in the model together differentiate between subjects in a reliable manner regarding mortality.

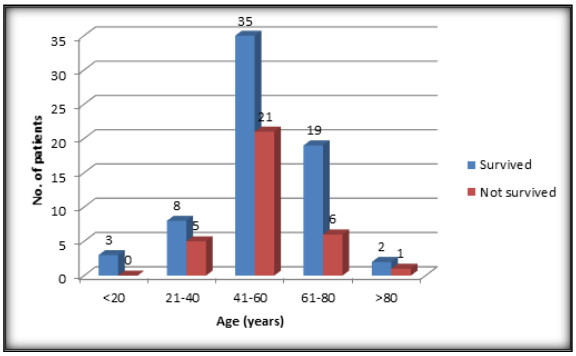
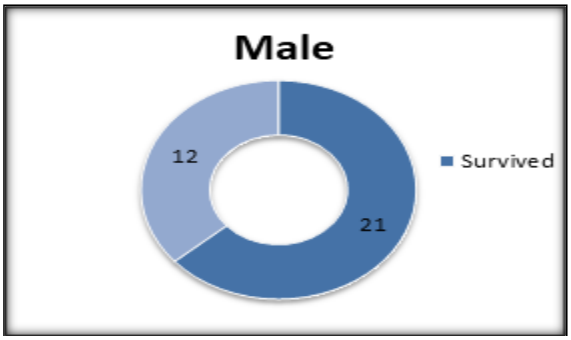


Figure 1: Graph depicting Age distribution of survivors and non survivors of Sepsis



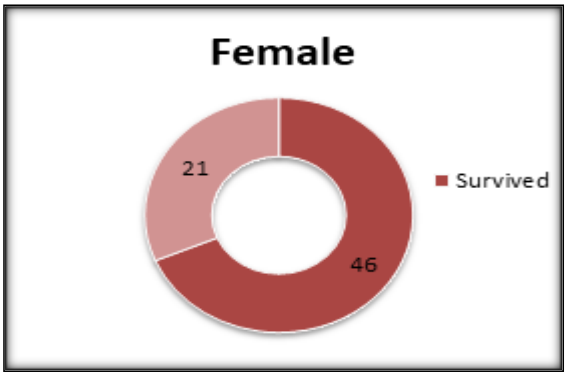


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Figure 2: Charts representing survival and non survival rate in male and female.

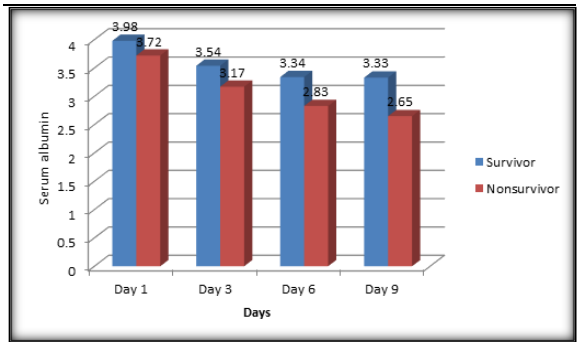

Figure 3: Serum albumin mean value range in survivors and non survivors

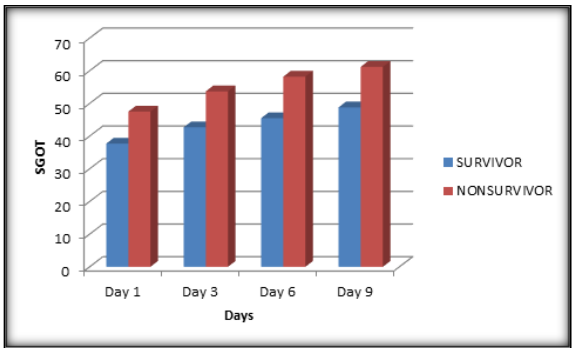

Figure 4: SGOT mean value range in survivors and non survivors

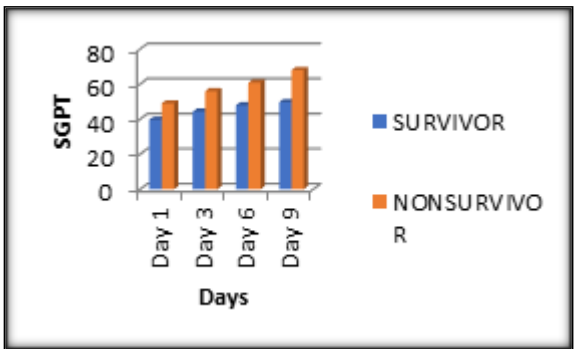

Figure 5: SGPT mean value range in survivors and non survivors

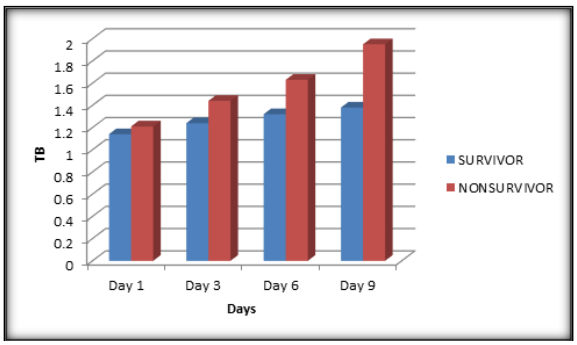

Figure 6: TB mean value range in survivors and non survivors

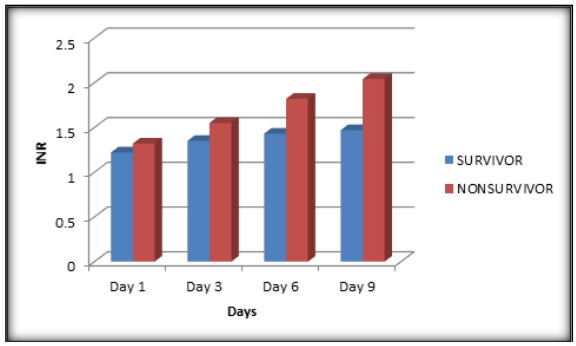

Figure 7: INR mean value range in survivors and non survivors

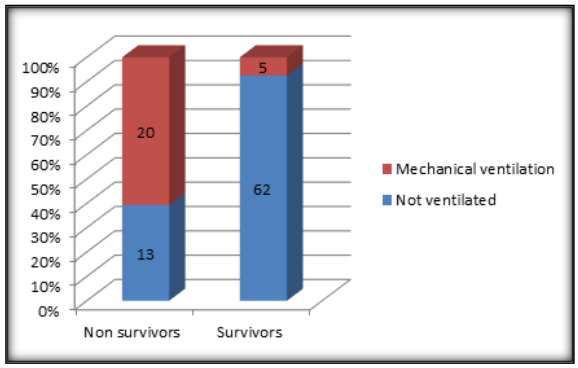

Figure 8: Distribution of study populations based on mechanical ventilation requirement

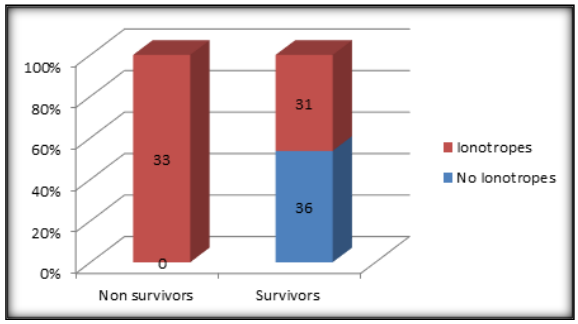

Figure 9: Distribution of study populations based on ionotropes requirement

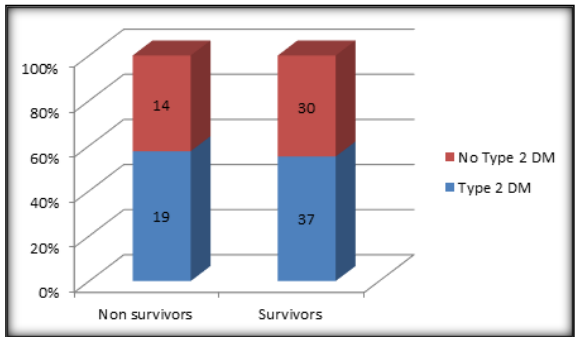

Figure 10: Distribution of Study Populations Based On Co-Morbidity

Table 1: Distribution of patients according to age group

Age in Years	Survived		Not survived		Total	
	No.	%	No.	%	No.	%
<20	3	100	0	0	3	3

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21-40	8	61.5	5	38.46	13	13
41-60	35	62.5	21	37.5	56	56
61-80	19	76	6	24	25	25
>80	2	66.6	1	33.3	3	3
Total	67	67	33	33	100	100
Mean	53.83					
RANGE	18-87					

Table 2: Distribution of patients according to gender

Gender	Survived	Not survived	Total
Male	21	12	33
Female	46	21	67
Total	67	33	100

Table 3: Day wise statistical evaluation of serum albumin levels between survivors and non survivors

Parameters	Survivor			Non survivor			
	Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean	p value
Age	53.53	14.298	1.74	54.4	11.84	2.06	0.003
Serum albumin							
Day 1	3.98	0.60568	0.074	3.72	0.45	0.07	0.01
Day 3	3.54	0.45833	0.05	3.17	0.41	0.07	0.007
Day 6	3.34	0.46776	0.05	2.83	0.36	0.06	0.002
Day 9	3.33	0.61195	0.07	2.65	0.35	0.06	0.002

Table 4: Day wise statistical evaluation of SGOT levels between survivors and non survivors

Parameters	SURVIVOR			NONSURVIVOR			
	Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean	p value
SGOT							
Day 1	37.7	11.5	1.40	47.5	13.76	2.39	0.0004
Day 3	42.7	10.9	1.34	53.7	14.07	2.44	0.0001
Day 6	45.5	12	1.47	58.2	16.12	2.80	0.0001
Day 9	48.8	14.2	1.73	61.2	16.37	2.85	0.0002

Table 5: Day wise statistical evaluation of SGPT levels between survivors and non survivors

Parameters	SURVIVOR			NONSURVIVOR			
	Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean	p value
SGPT							
Day 1	39.7	11.18	1.36	49	12.28	2.13	0.0002
Day 3	44.3	11.03	1.34	55.9	12.87	2.24	0.0002
Day 6	47.9	12.87	1.57	60.8	14.33	2.49	0.0002
Day 9	49.7	14.50	1.77	67.9	17.58	3.06	0.0001

Table 6: Day wise statistical evaluation of TB levels between survivors and non survivors

Parameters	SURVIVOR			NONSURVIVOR			
	Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean	p value
TB							
Day 1	1.14	0.27	0.034	1.21	0.25	0.044	0.001
Day 3	1.24	0.29	0.036	1.44	0.34	0.060	0.003
Day 6	1.32	0.36	0.044	1.63	0.42	0.074	0.0004
Day 9	1.38	0.47	0.057	1.95	0.54	0.094	0.0001

Table 7: Day wise statistical evaluation of INR levels between survivors and non survivors

Parameters	SURVIVOR			NONSURVIVOR			
	Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean	p value
Inr							
Day 1	1.22	0.35	0.043	1.32	0.46	0.07	0.01
Day 3	1.35	0.41	0.050	1.55	0.39	0.06	0.009
Day 6	1.43	0.49	0.061	1.82	0.45	0.07	0.0001
Day 9	1.47	0.60	0.074	2.04	0.53	0.09	0.005

Table 8: Results of univariate and bivariate logistic regression analyses comparing patients for predictor factor in mortality

Variable	Beta coefficient	S.E.	Odds ratio	95.0% C.I.for odds ratio Lower	Upper	P value
Serum albumin	0.359944326	0.083481	1.08	2.267418	3.303299	0.004
SGOT	0.516587383	0.064255	0.94	6.439084	20.56865	0.0002
SGPT	0.447357148	0.05342	0.93	23.90582	11.49309	0.002
Total bilirubin	0.129769633	0.047892	0.98	0.807139	1.126397	0.008

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INR	0.351206474	0.047403	0.93	0.503201	0.839527	0.004

CI=confidence intervals. P

DISCUSSION

In this study, numerous parameters were examined by correlating the relative statistical significance between the levels of serum albumin and other liver parameters in the two groups of survivors and non-survivors conducted on patients admitted in Department of Medicine, Darbhanga Medical College & Hospital Laheriasarai, which included a total of 100 sepsis patients:Patients ranged in age from 18 to 87, with 72 falling into the over-60 age group. The study population's median age was 53.8 years (SD 13.4). Mean (SD) age in the survivor group was 53.53±14.2 and in the nonsurvivor group was 54.42±11.8. In the group of survivors, the minimum and highest ages were 18 and 87, respectively, whereas in the group of non-survivors, they were 30 and 84. S Todi et al (2010) 22 study revealed a mean age of 58.17 years (SD 18.66), while Angus DC et al study's revealed a mean age of 57.0.22 Patients older than 60 years old made up 34.8% of the study's participants.

Total 33 male and 67 female patients made up the study's patient population, respectively. 21 female patients and 12 male patients made up the 33 non-survivors. In a similar vein, there were 21 male patients and 46 female patients out of the 67 survivors in total.In a research by S. Todi et al.[22] in India on the epidemiology of sepsis, male patients made up 57.71% of the participants. Male patients made up 51.9% of the patients in the study by Angus DC et al.[23] and 60.5% of the patients in the study by S Sreedharan et al.[24] According to this study, sepsis affects men more frequently than women.

Serial liver measures such as SGOT, SGPT, INR, and TOTAL BILIRUBIN monitoring on Days 1, 3, 6 and 9 had a strong correlation with the mortality of the research group. There were 67 survivors and 33 non-survivors out of 100 study populations. The minimum and maximum amounts of serum albumin were 2.9 g/dl and 5.5 g/dl, respectively. The mean SD of serum albumin on day 1 was 3.8 SD 0.57. Nevertheless, there was a small decline in serum albumin levels from day 1 to day 9, or 3.07 SD 0.64, with minimum and maximum values of 2 g/dl and 4.9 g/dl, respectively. The levels of total bilirubin showed similar trends, with mean SD values ranging from 1.17 SD 0.27 to 1.57 SD 0.56 from day 1 to day 9 respectively. The median SD of serum glutamic-oxaloacetic transaminase (SGOT) levels was also measured, and the range of the SD was 41.01 SD 13.07, with the minimum and maximum values being 22 and 76, respectively. In contrast to serum albumin, SGOT levels increased on day 9 and ranged between 32 and 100, respectively. Serum Glutamic Pyruvic Transaminase (SGPT) and INR levels also increased from day 1 to day 9, with mean standard deviation increases of 42.79 SD 12.31 to 52.95 SD 15.98 and 1.25 SD 0.37 to 1.66 SD 0.64, respectively. SGOT and SGPT increased by 69.6% and 78.3%, respectively, in a research published by Saputro et al. in 2022, with a mortality rate of 39.1% and an average number of inpatient days of 24 days.25 With a correlation coefficient of 0.200, the correlation test between increased serum transaminase (SGOT) and sepsis revealed no statistically significant link ($p = 0.065$, $p > 0.05$). On the other hand, an association of 0.296 was found between high serum transaminase (SGPT) and sepsis, which was significant ($p=0.006$, $p<0.05$). Increased bilirubin levels frequently occur late in the process of multiorgan failure during sepsis.26 An 'early' hepatic dysfunction, defined as a bilirubin concentration more than 2 mg/dL (> 34 mol/L) after 48 hours of admission, was present in 11% of a large cohort of ICU patients.27 When the INR value in patients with non-pulmonary infections surpasses 1.22, sepsis is strongly suspected, especially in people without a history of underlying conditions or medications that impact coagulation function. INR is suitable for the initial screening of sepsis in emergency patients and outpatient patients, especially in poor and middle-income countries.28 because of its low cost, quick detection, and simple interpretation.

All non-survivor patients, or a total of 33 patients, required an ionotropes dosage based on the requirements. However, in the survivor group, 31 individuals required an ionotrope dosage while 36 patients did not. Therefore, it is evident that the need for ionotropes is strongly correlated with the serial monitoring of albumin and other liver parameters. Dobutamine is regarded as the first-line inotrope in sepsis and is to be taken into consideration for patients who have chronic hypoperfusion symptoms or indications of myocardial dysfunction. Emergency medical personnel should take into account physiology and clinical trial data since vasopressor and inotrope medication has complicated effects that are frequently challenging to predict. In order to ascertain whether the chosen course of treatment is producing the desired effects, it is critical to periodically revaluate the patient.[29]

Out of 100 study populations, 67 survived and 33 nonsurvivors. As a result, patients are spending longer in hospitals because to lower albumin levels and higher SOPT, SGPT, INR, and total bilirubin levels. In a research by Santosh et al., serum albumin was significantly low in survivors who had issues and had stayed for a long time (>21 days). Hypoalbuminaemia, according to Dubois et al., was a strong dose-dependent predictor of poor outcomes in terms of death, morbidity, and length of hospital stay.In a different study, 90 days after discharge, severe sepsis/septic shock emerged in 0.17 percent of the patients. Our high-risk antibiotics exposed patients had a 65% higher probability of developing

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sepsis than those who weren't exposed to antibiotics.[30]

The use of mechanical ventilators among the 100 patients in this study, both survivors and non-survivors, was examined. Based on the number of patients who needed mechanical ventilators among non-survivors, 20 patients needed them whereas 13 patients did not, the number of patients who needed mechanical ventilators was 20. In contrast, only 5 patients in the survivor group needed mechanical ventilators, whereas 62 of them did not. This suggested that the need for a mechanical ventilator is strongly clinically and statistically correlated with serial monitoring of albumin and other liver markers. Acute respiratory failure brought on by sepsis is common, manifests early, necessitates non-invasive or invasive ventilator assistance, and may raise in-hospital mortality.[31,32] When treating septic patients with acute respiratory failure, intubation and invasive mechanical ventilation are standard rescue techniques.[33]

CONCLUSION

Due to the high morbidity and mortality associated with sepsis, there is a significant global healthcare burden. Although intense therapy choices have come a long way, the death rate is still high since it takes too long to make a diagnosis because there aren't any trustworthy diagnostic tools available. Early goal-directed therapy for severe sepsis and septic shock patients significantly improves patient outcomes. Serum albumin is a negative acute phase reactant, and inflammation causes a shift in its concentration. Despite all of the disadvantages that have been mentioned, albumin will still be extensively employed in clinical practise. It now seems that using albumin has more advantages than disadvantages in the vast majority of situations. The most economical predictor still in use is the use of preoperative albumin as a substitute indicator for forecasting outcomes in elective surgery. In hospitalised patients, the clinical outcome and serum albumin level are highly correlated. Liver parameters are also affected by sepsis through a variety of direct and indirect processes, as we outlined in the literature review. Thus, analysing the mortality, morbidity, length of hospital stays, need for ionotropes, and requirements for mechanical ventilation in sepsis patients using serial monitoring of serum albumin and other liver indicators has substantial results.

Acknowledgments

Declaration of Conflicting Interests.

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