Section: General Medicine

Original Research Article

USEFULNESS OF SEQUENTIAL ORGAN FAILURE ASSESSMENT (SOFA) SCORE AND ACUTE PHYSIOLOGY AND CHRONIC HEALTH EVALUATION II (APACHE II) SCORE IN ANALYSING PATIENTS WITH MULTIPLE ORGAN DYSFUNCTION SYNDROME IN SEPSIS PATIENTS IN CIVIL HOSPITAL AIZAWL

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ABSTRACT

Background: Sepsis with multiorgan dysfunction syndrome (MODS) is a leading cause of morbidity and mortality in intensive care units (ICUs). Early diagnosis and prognostication are essential to improve outcomes. Scoring systems such as Acute Physiology and Chronic Health Evaluation II (APACHE II) and Sequential Organ Failure Assessment (SOFA) are widely used to assess disease severity and predict mortality. The objective is to assess morbidity and mortality in patients with sepsis-associated MODS and to evaluate the prognostic utility of APACHE II and SOFA scores. **Materials and Methods:** This prospective study was conducted from November 2018 to December 2019, including 50 patients diagnosed with sepsis as per ACCP/SCCM criteria. Detailed clinical evaluation and relevant laboratory investigations, including blood cultures, were performed. APACHE II score was calculated on admission, and SOFA scores were recorded daily to assess organ dysfunction trends. Patients were categorized into survivors and non-survivors for comparative analysis. **Result:** Among 50 patients, 32 survived and 18 died. Non-survivors had significantly higher pulse rates and lower blood pressure, requiring more inotropic support. Mean Glasgow Coma Scale (GCS) scores were significantly lower in non-survivors ($p<0.001$). Although APACHE II scores were higher in non-survivors, the difference was only suggestive ($p=0.068$). SOFA scores were significantly higher in non-survivors on day 1 ($p=0.014$) and showed maximum significance on day 3 ($p<0.001$). Serial SOFA trends revealed decreasing scores in survivors, while non-survivors had persistently elevated scores. **Conclusion:** SOFA score is a reliable and dynamic tool for predicting outcomes in sepsis with MODS, especially when monitored serially. APACHE II, though useful at admission, is less effective in predicting mortality compared to SOFA. Early identification and intervention remain crucial in improving patient outcomes.

INTRODUCTION

Sepsis with multiorgan dysfunction syndrome (MODS) is a common cause of Intensive Care Unit (ICU) mortality and morbidity. The primary cause; infectious or non infectious, triggers an uncontrollable inflammatory response. Sepsis can be reversed, but as sepsis progresses to severe sepsis and septic shock the mortality rate substantially increases. Due to the high mortality associated with sepsis and its complications it is necessary to rapidly diagnose and treat the underlying cause. The diagnosis of sepsis relies on overt symptoms of systemic illness causing a change in the vital parameters of the patient as well as indication of infection through microbial cultures and serology. Various clinical biochemical and haematological parameters in septic patients serve as indicators of organ dysfunction and hence can be used to define the prognosis in a patient with sepsis.

Patients admitted to the ICU need aggressive supportive management as well as detailed

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investigations to reverse the cause. Early initiation of appropriate effective antimicrobial therapy is essential for a favourable outcome in the patient with sepsis. There is evidence that failure to initiate appropriate therapy correlates with increased morbidity and mortality.[1-3] Cultures and serology are available only after 24 to 48 hours. In the crucial hours which determine the prognosis of the patient the physician has to depend on clinical symptoms and demographic data to aid in diagnosis and management. Hence guidelines recommend empirical broad spectrum antibiotics that will cover all likely pathogens, as well as supportive care, early recognition and treatment of complications, and intensive monitoring to prevent worsening of sepsis. In more than one third of the patients aetiology is never determined even till death or discharge.

In India, tropical infections causing multiple organ dysfunction add to the burden of sepsis in ICU. Most patients present with acute undifferentiated fever with clinical syndromes like such as fever–myalgia, fever–arthralgia, fever–icterus, fever–rash, or acute encephalitic syndrome. Due to their varied presentation, multi system involvement and lack of clinical diagnostic criteria these tropical infections are often undiagnosed. The lack of sensitive tests to identify these infections, high cost and non availability of isolation techniques, add to the diagnostic dilemma. There is a need to identify the common tropical infections contributing to mortality in ICU. Studies in India have focussed on patients with sepsis due to established causes like malaria, leptospirosis or rickettsial infections. There are very few studies done to study the clinical course in patients presenting with acute undifferentiated fever. When a patient is admitted in ICU the aetiology is usually not established. The intensivists have very little data to treat such patients in the first 24 to 48 hours which are 15 crucial in reversing the process of sepsis and multi organ dysfunction. There are many scoring systems which are helpful in prognosticating the severity and outcome.[4,5]

Scoring systems for use in the intensive care unit (ICU) have been developed from the past 30 years. They are widely used in the field of critical care medicine. They allow a quantification of the severity of illness and a probability of in-hospital mortality. This allows the hospital to identify the weakness and initiate interventions aimed at quality improvement and allow patients to choose health care providers based on performance. The use of these prognostic models help in providing meaningful information to physicians when discussing patient prognosis with the patient's relatives. There are many scores available at present. But our study focuses on mainly Acute Physiology and Chronic Health Evaluation II (APACHE II) and Sequential Organ Failure Assessment (SOFA) scores. Our study mainly aims at assessing morbidity and mortality of patients with multiorgan dysfunction syndrome in sepsis and prognosticating the patients by using defined source like SOFA or APACHE-II.

MATERIALS AND METHODS

A prospective study was undertaken at Civil Hospital, Aizawl after the approval from Ethical Committee. The study was carried out in the period of November 2018 to December 2019 and 50 patients were included in the study. The patients with sepsis as defined by the American College of Chest Physicians/Society of Critical Care Medicine (ACCP/SCCM) Consensus Committee in 1992 were included in the study. The detailed history, clinical examination and all the relevant laboratory investigations were done including blood culture. In the present study, the conditions were defined according to standard practice and based on relevant literature.

All the patients of sepsis admitted to ICU/ emergency ward are being prognosticated on the basis of APACHE II score and SOFA score. APACHE II is calculated on day of admission. The predicted mortality rate was calculated on the basis of this score. To assess sequential involvement of organ we calculated SOFA score on every day. This gave us idea whether involvement of number of organ was increasing or decreasing and if the severity of particular organ was increasing. The minimum SOFA score was 0 and maximum of 24.

We are analyzing various profiles between two groups; survivor group which include the patients who are successfully discharged after recovery and non-survivor group which include the patients who died.

Inclusion Criteria

Patients above 18 years of age with evidence of sepsis and MODS on admission.

Exclusion Criteria

Patients who is on treatment with immunosuppressive agents, with retroviral infection and pregnant patients.

Statistical Methods: Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean measurements are presented in Number (%). Significance is assessed at 5% level of significance. The following assumptions on data is made.

RESULTS

The study was carried out in the period of November 2018 to January 2020 and 50 patients were included in the study. In our study, subjects were in the age group of 18 to 90 years. In our present study, out of 50 cases of sepsis with MODS, 28 were male and 22 were females. Out of 50 patients, all 50 had fever with breathlessness present in 16 patients. Comorbidities observed were diabetes, hypertension and COPD.

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Table 1: Demographic distribution of patients studied

Age in years	Number of patients	%
18-20	4	8
21-30	7	14.0
31-40	9	18.0
41-50	11	22.0
51-60	8	16.0
61-70	5	10.0
>70	6	12.0
Total	50	100.0
Gender		
Male	28	56.0
Female	22	44.0
Symptoms & signs		
1.Fever	50	100
2.Headache	6	12
3.Cough	15	30
4.Breathlessness	16	32
5.Altered Sensorium	4	8
6.Vomiting	16	32
7.Jaundice	5	10
8.Decreased Urine output	14	28
9.Abdominal Pain	18	36
10.Chest pain	4	8
11.Loose stools	5	10
Comorbidities		
Nil	22	44
Present	28	56
Diabetes	13	26
Hypertension	10	20
Paraplegic	1	2
COPD/IHD	4	8

Highest numbers of cases were seen the age group of 61 to 70 years i.e. 12 patients (24%) followed by 41 to 50 years in 10 cases (20%), 21 to 30 years in 9 cases (18%). Youngest patient in the study is 18 years old. Oldest patient is 91 years. Out of 50 patients, 28 were males and 22 were females. The commonest symptoms in our study population is fever in 50 patients (100%) followed.

Table 2: Distribution of Vital parameters of patients studied

Vital parameters	Number of patients (n=50)	%
Temperature(F)		
100(F)	0	0
101(F)	16	32
102(F)	17	34
103(F)	11	22
104(F)	6	12
Pulse rate (bpm)		
<60	-	-
60-80	-	-
80-100	-	-
>100	50	100
BP (mmHg)		
<90/60	22	44
>90/60	28	56
Respiratory Rate (cpm)		
<21	12	24
21-40	38	76
>40	-	-
Pallor, Icterus, Cyanosis		
No	34	68
Yes	16	32
Icterus	2	4
Pallor	14	28
Systemic disease		
RS	31	62
CVS	4	8
CNS	15	34.0
Hepatomegaly & Splenomegaly		
Hepatomegaly		
No	42	84
Yes	8	16

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Splenomegaly		
No	44	88
Yes	6	12

All patients had temperature above 1000 F and pulse rate above 100 beats per minute. 22 patients(44%) had blood pressure less than 90/60. Out of 50 patients, 8 had hepatomegaly and 6 had splenomegaly.

Table 3: Distribution of hematological parameters of patients studied

Hematological parameters	Number of patients (n=50)	%
Hemoglobin %		
<10	17	34
10-12	20	46.0
>12	13	22.0
TLC(/mm3)		
<4000	6	8.0
4000-11000	9	16.0
>11000	35	76.0
Electrolytes		
Serum sodium		
<135	34	68
135-146	16	32
>146	-	-
Serum potassium		
<3.5	14	28
3.5-5.5	29	58
>5.5	7	14
pH		
<7	-	-
7.0-7.35	39	78
7.35-7.45	6	12
>7.45	4	8

In the population studied, 16 patients (32%) had hemoglobin less than 10 gram%. In the patient studied 38 patients (76%) had total leukocyte count greater than 11000 per mm3, 4 patients had less than 4000 per mm3. On the day of admission 34 patients (68%) had hyponatremia, 14 patients (28%) had hypokalemia and 7 patients (14%) had hyperkalemia. Out of 50 patients, 39 patients (78%) had acidic pH on the day of admission.

Table 4: Distribution of radiological/ecg/urine R/E parameters of patients studied

Radiological parameters	Number of patients (n=50)	%
ECG		
1.Sinus tachycardia with P pulmonale	3	6
2.LVH with strain	2	4
3.Sinus tachycardia	43	86
4.sinus tachycardia with LVH	2	4
Chest x-ray		
1.Normal	10	20
2.Pulmonary edema	4	8
3.Lower zone consolidation	18	36
4.Pleural effusion	14	28
5.Cardiomegaly	1	2
6.Emphysema	1	2
7.TB	1	2
8.Pleural thickening	1	2
Urine routine		
Normal	33	66
Abnormal	17	34
ECHO		
1.Normal	41	82
2.Concentric LVH	2	4
3.LVD/MVP	4	8
4.RA & RV dilated	3	6
Haematocrit		
<25	1	2
25-40	27	54
>40	22	44
Total	50	100.0

Table 5: Distribution of blood culture of patients studied

Blood culture	Number of patients	%
No growth	50	100.0
Growth	-	
Total	50	100.0

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Dengue Profile		
Negative	47	94
Positive	3	6
Total	50	100.0
Leptospira antibody	Number of patients	%
Negative	47	94
Positive	3	6
Total	50	100

Out of 50 patients studied, 3 are dengue positive proved by serology. Only 2 out of 50 patients had leptospira antibody positive.

Table 6: Distribution of ventilator support, inotropic support, dialysis, Duration of ICU stay in patients studied

	Number of patients (n=50)	%
Ventilator Support		
•□No	17	34
•□Yes	33	66
Inotropic support		
•□No	19	38
•□Yes	31	62
Dialysis		
•□No	39	78
•□Yes	11	22
Duration of ICU stay		
•□<7	41	82
•□>7	9	18

Out of 50 patients, 33 patients (66%) required ventilatory support, 31 patients (62%) required inotropic support, 11 patients (22%) required dialysis. Duration of ICU stay was less than 7 days in 41 patients.

Table 7: Comparison of symptoms with survivors and non-survivors of patients studied

Symptoms	Survived				p value
	Non survived (n=23)		Survived (n=27)		
	No.	%	No.	%	
1.Fever	23	100.0	27	100.0	1.000
2.Headache	2	8.69	3	11.1	0.684
3.Cough	6	26.08	8	29.6	0.962
4.Breathlessness	8	38.9	10	37.04	0.532
5.Altered Sensorium	2	8.69	2	7.41	0.908
6.Vomiting	6	26.1	9	33.3	0.872
7.Jaundice	2	8.69	2	7.4	0.712
8.Decreased Urine output	5	21.7	12	44.4	0.984
9.Abdominal Pain	6	26.1	10	37.03	0.892
10.Chest pain	3	13.04	3	11,1	0.938
11.Loose stools	2	8.69	3	11.1	0.742

Out of 50 patients studied, 23 patients died with mortality rate of 46%. This study further focuses on comparison between survivor and non survivor groups.

Table 8: Comparison of comorbidities with survivors and non-survivors of patients studied

Comorbidities	Survived			
	Non survived (n=23)		Survived (n=27)	
	No.	%	No.	%
Nil	7	30.43	14	51.85
Present	16	69.56	13	48.15
Diabetes	5	21.7	8	29.6
Hypertension	7	30.4	4	14.8
Paraplegic	1	4.34	0	0.0
COPD/IHD	3	13.04	1	3.7
Signs				
No	13	72.2	24	75.0
Yes	5	27.8	8	25.0
Icterus	0	0.0	1	3.1
Pallor	5	27.8	7	21.9

Comorbidities are statistically similar in two groups with p=0.38. In our study, 5 among non survivors and 7 among survivors had pallor.

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Table 9: Comparison of systemic disease with survivors and non survivors of patients studied

Systemic disease	Survived				p value
	Non survived (n=23)		Survived (n=27)		
	No.	%	No.	%	
RS	12	52	18	66.6	0.279
CVS	1	4.3	2	7.4	0.921
CNS	10	43.4	7	25.9	0.0169
Hepatomegaly					
•□No	19	82.6	25	92.5	0.434
•□Yes	3	17.3	2	7.5	
Splenomegaly					
•□No	23	100.0	21	77.7	0.038
•□Yes	0	0.0	6	22.2	

Table 10: Evaluation of study variables with survivors and non survivors of patients studied

Variables	Non-survived	Survived	p value
Age in years	51.06±19.59	46.84±15.77	0.411
Temperature	102.48±1.06	102.61±1.01	0.658
Pulse rate	123.44±13.51	117.63±5.04	0.033
Respiratory rate	27.22±5.54	26.5±5.47	0.658
Hemoglobin	11.14±4.02	10.89±2.04	0.770
Total count	15827.78±8423.69	22893.75±24048.53	0.236
Serum sodium	132.83±4.79	130.53±3.92	0.072
Serum potassium	4.24±0.67	3.96±0.85	0.236
PH	7.24±0.13	7.24±0.1	0.989
Serum amylase	20.56±11.55	17.69±5.97	0.251
Haematocrit	37.54±9.67	38.58±4.39	0.605

Out of 50 patients studied, non survivors had higher pulse rate than non-survivors with the rest of parameters being statistically similar. GCS was statistically high in case of survivors as compared to non-survivors on all days.

Out of 50 patients studied, there was no statistical difference between survivors and non survivors on serum bilirubin value.

Table 11: Comparison of ventilator support, dialysis, inotropic support and duration of ICU stay with survivors and non survivors patients studied

	Non survived (n=23)	Survived (n=27)	P value
Ventilator support	21(88.9%)	12(44.4%)	0.0021
Dialysis	3(13%)	7(25.9%)	0.295
Inotropic support	17(73.9%)	12(44.4%)	0.078
Duration of ICU stay	3.72±3.08	3.75±2.02	0.969

21 out of 23(88.9%) among non survivors required ventilator support whereas 12 out of 27(44.4%) among survivors required ventilator support suggesting significant respiratory system involvement among non survivors (p=0.0021). The mean duration of ICU stay did not vary between non-survivors and survivors (3.72 v/s 3.75).

17 out of 23 (73.9%) among non-survivors required inotropic support whereas 12 out of 27(44.4%) among survivors required inotropic support suggesting statistically significant hypotension among non- survivors (p=0.078). However, dialysis was required more among survivors than non-survivors (25.9% v/s 13%, p=0.295) but was not statistically very significant. Serum creatinine among survivors who underwent dialysis varied between 6mg/dl to 10 mg/dl.

Table 12: Evaluation of SOFA score with survivors and non survivors patients studied

SOFA score	Non survived	Survived	p value
Day 1	10.33±3.45	8.04±2.64	0.012*
Day 2	11.63±4.33	8.28±2.62	0.002**
Day 3	13.61 ±4.06	6.26±2.96	<0.001**
Day 4	10.78±3.77	5.94±3.41	0.001**
Day 5	12.25±4.8	4.55±3.27	<0.001**
Day 6	12.29±6.1	3.39±2.77	<0.001**
Day 7	14.2±3.9	2.82±2.61	<0.001**
Day 8	13±3.39	2.45±2.5	<0.001**
Day 9	13.8±4.09	1.81±1.72	<0.001**
Day 10/last day	13.5±5.69	1.33±1.23	<0.001**

Out of 50 patients studied, SOFA score was significantly low especially on day 3 (6.84±2.96) in survivor group as compared to non survivor group whose mean day 3 value being (13.42±4.060).

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Table 13: Comparison of APACHE II score with survivors and non-survivors patients studied

APACHE II	Non survived	Survived
<10	2(11.1%)	4(12.5%)
10-20	5(27.8%)	16(50.0%)
20-30	8(44.4%)	10(31.3%)
>30	3(16.7%)	2(6.3%)
Total	18(100.0%)	32(100.0%)
Mean ±SD	22.86 ±9.65	17.54±7.34

DISCUSSION

The clinical profile of 50 patients with sepsis with MODS was studied. There were 28 males and 22 females in this cohort. The age of patients varied from 18 years to 90 years. The mean age was 48.36 years. Similar studies in India have shown male preponderance with most patients in the fourth to fifth decade. Even in our study, most patients were in fourth to fifth decade. Comorbidities were present in 24 patients with diabetes mellitus being present in 14 patients.

All patients had fever with breathlessness being the next predominant symptom observed in 16 patients. Even decreased urine output was observed in 16 patients accounting for acute kidney injury. Among the several disorders encountered in sepsis, acute kidney injury (AKI) is one of the most important because it is a life-threatening condition, increases the complexity and cost of care, and is an independent risk factor for mortality.[6,7]

The mean SOFA score on the day of admission was 8.74 and the mean APACHE II score on the day of admission was 20.14 suggesting there was significant organ dysfunction in all patients. In our study, 30 patients required ventilator support,

28 patients required inotropes, 10 patients required dialysis. This again suggests significant organ dysfunction. The mortality recorded in this study is 36%. In large clinical trials, the mortality associated with severe sepsis and septic shock ranges between 13% and 50%.[1]

Finding the cause was not the main objective of the study. However, 9 cases of dengue were indentified. 2 cases of leptospirosis was observed. There was not a single case of malaria in this study. In 4 cases of UTI, organisms were isolated: 3 were caused by Eschieria coli, 1 being klebsiella species. 1 sputum culture revealed Streptococcus pneumonia species.1 case of H1N1 was identified. 1 special case in which anti- HAV was positive. It was not sure whether hepatitis A caused sepsis or it was an incidental finding. About 17 patients had lower lobe pneumonia. However, only 1 sputum C/S revealed Streptococcus pneumonia species and others had no growth. Chest x-ray revealed 17 patients had lower zone consolidation and 5 had ARDS.ECG showed all 50 had sinus tachycardia with 2 also had P-pulmonale, 2 had LVH.

In our study, 18 patients died and 32 patients survived. The mean age among non-survivors was little high compared to survivors (51.7 v/s 46.84) which was not statistically significant (p=0.411). 7 patients among non-survivors and 9 patients among survivors had breathlessness which was statistically similar (p- 0.532). Even comorbidities are statistically similar in two groups with p=0.423. Presence of pallor, icterus are statistically similar in non-survivors and survivors group with p=0.830. The non-survivors had a higher pulse rate (mean 123.44 v/s 117.63 p=0.033) and a lower blood pressure and therefore a greater requirement for inotropes compared to survivors. In our study, mortality rate among septic shock patients was 72.2%. Septic shock is associated with a higher mortality as shown with studies in Europe.[8] Degoricija et al recorded a mortality rate of 72.1% in patients with septic shock in Croatia.[9] Studies in India have recorded a mortality of 59.26% in patients with severe sepsis and septic shock.[10]

The respiratory rate was high in non survivors than survivors (27.22 v/s 26.5) which was not statistically significant (p=0.658). Leukocytosis and leukopenia is often associated with mortality and normal white blood cell counts are associated with survival.[11] In our study however non-survivors had a mean total count of 15,827/ µL and survivors had a mean total count of 22, 893 /µL at admission. The difference was not statistically significant. Studies have shown that the Glasgow coma scale at admission is an independent predictor of mortality.[12] In our study, the mean GCS among survivors was high compared to non survivors on all days (day1, 14.19 v/s 10.19) and was statistically very significant (p<0.001).

In our study, mean serum creatinine did not significantly differ among non- survivors and survivors on day 1 and also on initial few days (day1, 1.76 v/s 2.77, p=0.101). Even mean serum bilirubin was significantly different among survivors and non-survivors (day 1, 2.19 v/s 2.78, p=0.375). In our study, 16 out of 18(88.9%) among non-survivors required ventilator support whereas 14 out of 32(43.8%) among survivors required ventilator support suggesting significant respiratory system involvement among non-survivors (p=0.002). The mean duration of ICU stay did not vary between non survivors and survivors (3.72 v/s 3.75). It may be attributable to early death among non-survivors and early recovery among survivors. In our study, 13 out of 18 (72.2%) among non-survivors required inotropic support whereas 15 out of 32(46.9%) among survivors required inotropic support suggesting statistically significant hypotension among non-survivors (p=0.083). However, dialysis was required more among survivors than non-

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survivors (25% v/s 11.1%, p=0.295) but was not statistically very significant.

Many studies have shown that high APACHE II score at the time of admission was associated with high mortality.[13] In this study, though mean APACHE II score was high among non-survivors than survivors (23.28 v/s 18.75), it was of just suggestive statistical significance (p=0.068+). SOFA score has been validated extensively for prognostification. In our study, extensive study of SOFA score was done from day 1 to the last day. The SOFA score on day 1 was high among non survivors and low among survivors which was statistically significant (10.17 v/s 7.94, p=0.014).

However, the most significant difference was observed on day 3. The SOFA score was very high among non-survivors as compared to survivors which was statistically very significant (13.42 v/s 6.84, p<0.001). This was similar to many studies that have been done. Vosylius et al,[12] in their study on 117 ICU patients with sepsis showed that the changes in the severity of organ dysfunction were closely related to the outcome of the patients admitted to ICU. The SOFA score on day 3 was better compared with SOFA score on day 1 as the tool for outcome prediction. Vincent et al,[14] in their study in 40 ICU's in 16 countries showed that the total SOFA score increased in 44% of the non- survivors but in only 20% of the survivors. Saulius Vosylius, Jurate Sipylaite in Vilnius, Lithuania observed that SOFA score on day 1 and day 3 was significantly higher in non-survivors than those in survivors. Flavi Lopez Fereria; Daliana Peres Bota,[15] in Belgium found initial SOFA score up to 9 predicted mortality of less than 33% while an initial SOFA score of greater than 11 predicted a mortality rate of 95%.

Studies have shown that in the SOFA scores; cardiovascular, neurological, and respiratory, renal, haematological and hepatic dysfunctions were independent risk factors for mortality.[12] In our study, also the same have been observed as described above for respiratory, cardiovascular and neurological variables. However, renal and hepatic parameters did not vary much among non survivors and survivors.

CONCLUSION

Serial measurement of SOFA score during first week is very useful tool in predicting the outcome. The trend of SOFA score was progressively declining in survivors while non-survivors had stable higher score during the first week. The APACHE II score on day of admission, though reliable, was not very effective in predicting the mortality rate.

Limitations of the Study: With a sample size of 50 patients this model requires external validation. The time of admission to ICU for each patient is different. Lead time bias is possible. Nosocomial complications and socio economic constraints are difficult to model in studies. History of prior antibiotic usage could not be ascertained by history.

REFERENCES

1. Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J. Harrison's Principles of Internal Medicine. 20th ed. New York: McGraw Hill; 2018.
2. Balk RA. Optimum treatment of severe sepsis and septic shock: evidence in support of the recommendations. Dis Mon. 2004;50(4):168–213.
3. Dellinger RP, Levy MM, Carlet JM, Bion J, Parker MM, Jaeschke R, et al. Surviving Sepsis Campaign: international guidelines for management of severe sepsis and septic shock. Crit Care Med. 2008;36(1):296–327.
4. Ganar A, Potey S. To evaluate and compare ability of two prognostic scoring systems in predicting mortality of critically ill patients in adult intensive care unit. Int J Contemp Med Res. 2019;6(3):C30–C34.
5. Hosseini M, Ramazani J. Evaluation of Acute Physiology and Chronic Health Evaluation II and sequential organ failure assessment scoring systems for prognostication of outcomes among Intensive Care Unit's patients. Saudi J Anaesth. 2016 Apr-Jun;10(2):168-73.
6. Ronco C, Kellum JA, Bellomo R, House AA. Potential interventions in sepsis-related acute kidney injury. Clin J Am Soc Nephrol. 2008 Mar;3(2):531-44.
7. Chang YC, Invernizzi J, Mcizana T. Validation of the APACHE II scoring system in critically ill patients diagnosed with COVID 19 and admitted at a regional level hospital intensive care unit: A retrospective study. South Afr J Crit Care. 2025 Sep 23;41(2):e1522.
8. Jacobson S, Johansson G, Winsö O. Primary sepsis in a university hospital in Northern Sweden: a retrospective study. Acta Anaesthesiol Scand. 2004;48(8):960–967.
9. Degoricija V, Sharma M, Legac A, Gradišer M, Šefer S, Vučicević Z. Survival analysis of 314 episodes of sepsis in a medical intensive care unit: impact of ICU performance and antimicrobial therapy. Croat Med J. 2006;47(3):385–397.
10. Todi S, Chatterjee S, Sahu S, Bhattacharyya M. Epidemiology of severe sepsis in India: an update. Crit Care. 2010;14(Suppl 1):382.
11. Oliveira AP, Barata CH, Murta EF, Tavares-Murta BM. Comparative study of survivor and non-survivor sepsis patients in a university hospital. Rev Soc Bras Med Trop. 2008;41(1):50–54.
12. Vosylius S, Sipylaite J, Ivaskevicius J. Sequential organ failure assessment score as the determinant of outcome for patients with severe sepsis. Croat Med J. 2004;45(6):715–720.
13. van der Merwe E, Kidd M, Metzker S, Bolliger CT, Irusen EM. Validating the use of the APACHE II score in a tertiary South African ICU. S Afr J Crit Care. 2005;21(1): 21(1):46 48 50 52 54.
14. Vincent JL, de Mendonça A, Cantraine F, Moreno R, Takala J, Suter PM, et al. Use of the SOFA score to assess organ dysfunction/failure in intensive care units: results of a multicenter, prospective study. Crit Care Med. 1998;26(11):1793–1800.
15. Ferreira FL, Bota DP, Bross A, Mélot C, Vincent JL. Serial evaluation of SOFA scores to predict outcome in critically ill patients. JAMA. 2001;286(14):1754–1758.

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