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General Medicine

RETROSPECTIVE STUDY OF ADULT POPULATION SEPSIS IN ICU PATIENTS IN TERTIARY CARE CENTRE

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ABSTRACT **Background and Aim:** Sepsis is a major cause of morbidity and mortality worldwide. To determine the incidence and outcome of sepsis among adult patients, a retrospective study was conducted in Intensive care unit (MICU, ICCU, SICU) in a tertiary care center from July2017 to December 2017. Age,gender,requirement of Mechanical ventilation and Hemodialysis , SOFA score and sorce of infection was compared among survived and non-survived sepsis patient.

Materials and methods: all 648 patients admitted in ICU over six months were included in study. Patient's data was extracted from inpatient record charts and investigation reports. Variables measured were patient's demographic data, incidence of sepsis, mean SOFA Score on Day 1 and Day 3, source of sepsis or infection site, whether patient required mechanical ventilation and /or hemodialysis and outcome in the form of survival.

Results: There were 648 admissions to ICU during study period with 100 cases of sepsis(15.43%). Mean age of sepsis patient was 64.5 years. Maximum patients were from age group 41-50. Male to female ratio was 1.6:1. Predominant source of infection was respiratory tract infection. Mean SOFA score on Day1 was 9.03 and on Day 3 was 10.02.Out of 100 patients of sepsis 55 patients' required mechanical ventilation and 37 patients required hemodialysis. ICU mortality was 58%.There was significant difference (<0.001) between requirement of ventilation among survived and non-survived sepsis patients. SOFA score was significantly high in non-survived patients on Day 1 and 3

Conclusion: sepsis is common in ICU. Mortality rate is high in this group.

KEYWORDS :

INTRODUCTION:

The term "sepsis" is derived from Greek word "sepo" meaning "I rot" and was first introduced in the poems of Homer (ca. 18th century BC). Sepsis and septic shock are among the major causes of mortality in critically ill patients. It is the second leading cause of death worldwide. As per the World Health Organization (WHO), pneumonia is the leading cause of sepsis.[2-3] Historically, the mortality associated with sepsis and septic shock has been approximately 50 to 75%. Introduction of antibiotics, approximately 50 to 60 years ago, brought the mortality rate in the range of 30 to 50%, and subsequent advancement in treatment reduced mortality to approximately 18%.[6-7]

As per the 2016 definition, sepsis is a life-threatening organ dysfunction due to a dysregulated host response to infection.[5] Organ dysfunction is defined as an increase of 2 points in the SOFA score. Basic components in management of sepsis and septic shock include initial resuscitation, vasopressor/inotropic and hemodynamic support, early antibiotic administration, source control, diagnosis (cultures and imaging), supportive care (ventilation, dialysis, transfusion, etc.), and infection prevention.

The current study intends to study the epidemiology and outcomes of patients with sepsis in our setting.

Materials and methods:

A retrospective observational study was conducted in Intensive care unit (MICU, ICCU, and SICU) in a tertiary care center from July 2017 to December 2017. Age, gender, requirement of mechanical ventilation and hemodialysis, SOFA score and source of infection was compared among survived and non-survived sepsis patient. Patient's data was extracted from inpatient record charts and investigation reports. Variables measured were patient's demographic data, incidence of sepsis, mean SOFA Score on Day 1 and Day 3, source of sepsis or infection site, and outcome in the form of survival.

RESULTS:

There were 648 admissions to ICU during study period with 100 cases of sepsis (15.43%). Mean age of sepsis patient was 64.5 years. Maximum patients were from age group 41-50. Male to female ratio was 1.6:1. Predominant source of infection was respiratory tract infection (34%). Mean SOFA score on Day1 was 9.03 and on Day 3 were 10.02. (Table no.1)

Out of 100 patients of sepsis, 55 patients required mechanical ventilation and 37 patients required hemodialysis. ICU mortality was 58%. Requirement of ventilation was significantly high ($p< 0.001$) in non survived sepsis patients. SOFA score was significantly high in non-survived patients on Day 1 and 3 than survived patients.

DISCUSSION:

This study documents incidence of sepsis, patient's demographics, prognostic factors and their outcome in an adult ICU population over six months.

Incidence of sepsis in our study was 15.43% which is comparable to 13.1% by Todi et al.[4] Similar incidence of 10% was observed in the ANZICS study[8] and studies conducted in Italy and United States. However a French study noted an incidence of 27%, similar to INDICAP study.[9] The reason for these discordant results could be related more to the difference of health care delivery systems.

Male patients constituted 61% which is similar to INDICAPS study (63.4%).[9]

Our study population had comparatively higher mean age on admission (64.5 years) which is similar to the ANZICS study (60.7 years).[8] Maximum patients (36%) were from age group 41-50. (Table no. 3)

In our cohort of septic patients, ICU mortality was 58%. it is comparable to mortality results of 56.1%, observed by Chatterjee et al. We compared septic patients in two groups according to their outcome in the form of survived and non-survived patients. Both groups were statistically gender matched (P=0.538). There was also no statistically significant difference between mean ages of presentation in survived and non-survived patients (P=0.329).

We observed no statistical significant difference in requirement of hemodialysis (P=0.023) in both groups. However requirement of mechanical ventilation was significantly high (P< 0.001) in non-survived patients. Abhinandan K.S. et al also observed significant difference between requirement of mechanical ventilation in non-survived patients than survived patients and insignificant difference in requirement of hemodialysis.[10]

Mean SOFA score on Day1 was 9.03 and on Day 3 was 10.02.

Mean SOFA score was 6.42+_2.5 in survived patients and 11.77+_2.76 in non-survived patients. Our observation is similar to study by Shabir et al.[11] They observed mean SOFA score of 6.25 +_ 1.8 in survived groups and 12.82+_2.70 in non-survived group. Non-survived group had a higher SOFA score on day 1 and day 3 than survived group which was statistically significant (P<0.001).

Most common source of infection for sepsis in our study was respiratory tract (34%) followed by urogenital tract infection(27%). Similar observation is seen by Todi et al[4]. They found 46.2% patients with lung infections as the source for sepsis. Chatterjee et al found most frequent site of infection as respiratory tract (53.3%) followed by abdomen (14.9%).

In comparison among survived and non-survived patients, there was no statistically significant difference (P=0.299) with respect to source of infection.

CONCLUSION:

Sepsis is common in ICU. Mortality rate is high in this group. Requirement of ventilation was significantly high in non survived patients. SOFA score was significantly high in non-survived patients on Day 1 and 3.

Table no. 1 Patient demographics and outcomes

Sepsis patients and their outcome	Values
Number of sepsis patients, N (%)	100 (15.43%)
Men: Women	61:39
Mean age	64.5 Years
Survival:Non-survival,N (%)	42:58 ()
Mean SOFA score on Day 1	9.03
Mean SOFA score on Day 3	10.02

Table no. 2 Comparison of survived and non survived patients

		Outcome-survived/non survived		
		Survived N=42	Non survived N=58	P- value
Gender	Male	24	37	0.538* NS
	Female	18	21	
Age	Mean +_ SD	50.10+_13.06	52.60+_11.91	0.329# NS
Hemodialysis	Yes	10	27	0.023* Ns
	No	32	31	
Mechanical ventilation	Yes	11	44	<0.001* S
	No	31	14	
SOFA Score	Day1	7.29+-2.40	10.29+-2.58	<0.001# S
	Day3	5.55+-2.60	13.26+-2.94	<0.001# S
Source of infection	Respiratory	15	19	0.299* NS
	Urogenital	13	14	
	Abdomen	6	16	
	Tropical infections	8	6	

*Chi square test used; # Unpaired t-test used S= Significant; NS Not significant

Table no. 3 Age and outcomes in sepsis patients

Age group	Outcome		Total
	Survived	Non survived	
<-30	2	1	3
31-40	9	8	17
41-50	14	22	36
51-60	8	14	22
61-70	8	9	17
>70	1	4	5
Total	42	58	100

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