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An Observation of the Clinical and Laboratory Profile in Patients with Sepsis and Severe Sepsis

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Abstract **Original Research Article**

Introduction: Sepsis is one of the oldest and most elusive syndromes in Medicine. The clinical manifestations of sepsis are highly variable, depending on the initial site of infection, the causative organism, the pattern of acute organ dysfunction, the underlying health status of the patient, and the interval before initiation of treatment. ***Aim of this study:*** To observe the clinical and laboratory profile of patients with sepsis & severe sepsis as well as hospital mortality at the end of the 1st week. ***Method:*** It was hospital based cross sectional, observational study and was carried out in the Department of Medicine, Dhaka Medical College Hospital (DMCH) during the period of January 2015 to December 2015.Patients admitted in the intensive care unit (ICU) of DMCH, who fulfilled the criteria of sepsis or severe sepsis and aged more than 14 Years, among them 100 patients were enrolled in the study. Data from each patient was collected in structured data sheets. Finally, all data compiled and statistical analysis was carried out by using IBM SPSS Statistics 22.0 (IBM Inc, Chicago, Illinois, USA). ***Result:*** Among 100 patients, 35% were in sepsis group and 65% were in severe sepsis group. Fever was present in 97.1% cases, Heart rate > 90 beats/min in 82.9%, Tachypnea in 37.1%, edema 5.7%, Hyperglycemia in 25.7%, Arterial hypoxemia in 22.9%, Leukocytosis in 88.65% and Plasma C-reactive protein was 94.3%.Sepsis induced arterial hypotension was 40%, Hyperlactataemia was 44.6%, Acute oliguria was 18.5%, Acute lung injury with Pao2/Fio2 < 200 in the presence of pneumonia as infection source was 16.9%, Creatinine > 2.0 mg/dL was 23.1%, Serum bilirubin > 2 mg/dL was in 7.7%, Thrombocytopenia was 38.5% and Coagulopathy was 21.5%. Correlation of GCS score at seventh day with initial AMT score appeared to be particularly strong (Rs = 0.663, P<0.001). Blood Culture was positive in 8.2% only. Whereas Throat Swab culture is positive in 83.3% cases. Systemic hypotension (P=0.004), Hyperlactataemia (P=<0.001), Thrombocytopenia (P=0.020), Coagulation abnormalities (P=<0.001) differed significantly between survivor and non-survivor group. The female mortality was more (27.27%) in severe sepsis group. ***Conclusion:*** This study will help the caregiver doctor to think in a systematic way for avoiding diagnostic delay and also highlights comparative values of different clinical and laboratory parameters. Statistical models can be developed based on similar clinical and laboratory variables that may help to develop criteria to predict different outcomes.

Keywords: sepsis, severe sepsis. Clinical and laboratory findings, hospital outcome.

INTRODUCTION

Sepsis is defined as probable or documented infection with systemic manifestations of infection. Severe sepsis is defined as sepsis plus sepsis-induced organ dysfunction or tissue hypo perfusion [1]. The clinical manifestations of sepsis are highly variable, depending on the initial site of infection, the causative

organism, the pattern of acute organ dysfunction, the underlying health status of the patient, and the interval before initiation of treatment [2]. Respiratory compromise is classically manifested as the acute respiratory distress syndrome (ARDS), which is defined as hypoxemia with bilateral infiltrates of no cardiac origin [3]. Cardiovascular compromise is manifested primarily as hypotension or an elevated serum lactate level [1]. Acute kidney injury is manifested as decreasing urine output and an increasing serum creatinine level and frequently requires treatment with renal-replacement therapy, The laboratory parameters of patients with sepsis depend on initial conditions, co morbidity and acute organ dysfunction [4-6]. Prolonged Activated Partial Thromboplastin Time (APTT) and Prtothombin Time (PT) in patients with sepsis are associated with more severe forms of the disease; APTT is prolonged in no survivors, while platelet count and fibrinogen levels were higher in survivors [7]. Initial serum lactate is associated with mortality independent of clinically apparent organ dysfunction and shock in patients admitted to the inpatient ward or ICU with severe sepsis. Both intermediate and high serum lactate levels are independently associated with mortality [8]. Comorbidities that act as a risk factor and aggravating factor of sepsis were found among 88.1%of the subjects, comprising of diabetes mellitus, cardiovascular disease, cerebrovascular disease, and renal disease, malignancy, or HIV infection [9]. Recent study involving 14,000 ICU patients in 75 countries; gram-negative bacteria were isolated in 62%of patients with severe sepsis who had positive cultures, gram-positive bacteria in 47%, and fungi in 19% [1]. Hospital mortality in ICU patients of Bangladesh suffering from severe sepsis was 49·2% [11]. Hospital mortality was 44.5% (572/1285) in Asia [12].

Sepsis has considerably variable presentation, laboratory parameters and etiology in different regions. It demands early recognition, critical care and appropriate triage. This study will enable the physicians' for–early detection, initiation of treatment, appropriate referral for critical care support. There is no national guideline or consensus on diagnosis and management of sepsis in Bangladesh. So this study will serve as a basis of development of Bangladeshi population-based profile for sepsis.

OBJECTIVES

a) General objectives
   To observe the clinical and laboratory profile of patients with sepsis
b) Specific objectives
   To observe mortality and comorbidites of patients with sepsis

MATERIALS AND METHODS

It was hospital- based cross- sectional, analytical observational study. This study was carried out in the Department of Medicine, Dhaka Medical College Hospital (DMCH). The Patients admitted in department of Medicine were the study population. Sepsis patients admitted in intensive care unit (ICU) of DMCH referred from the department of Medicine were included in the study. The study was carried out during the period from January 2015 to December 2015. The sampling method was non-random, and purposive. The patients who fulfilled the criteria of sepsis or sever sepsis and age more than 14 Years were enrolled in the study. Sepsis is defined as the presence (probable or documented) of infection together with systemic manifestations of infection. Infection, documented or suspected and some of the following: General variables; Fever (> 38.3°C) Hypothermia (core temperature < 36°C) Heart rate > 90/min or more than two SD above the normal value for age, Tachypnea, Altered mental status, Significant oedema or positive fluid balance (> 20 mL/kg over 24 hr.), Hyperglycaemia (plasma glucose > 140 mg/dL or 7.7 mmol/L) in the absence of diabetes. - Inflammatory variables; Leukocytosis (WBC count > 12,000/ µL),Leukopenia (WBC count < 4000/ µL), Normal WBC count with greater than 10% immature forms, Plasma C-reactive protein more than two SD above the normal value, Plasma procalcitonin more than two SD above the normal value. Hemodynamic variables; Arterial hypotension (SBP < 90 mm Hg, MAP < 70 mm Hg, or an SBP decrease > 40 mm Hg in adults or less than two SD below normal for age). Organ dysfunction variables; Arterial hypoxemia (Pao2/Fio2 < 300), Acute oliguria (urine output < 0.5 mL/kg/hr for at least 2 hrs despite adequate fluid resuscitation), Creatinine increase > 0.5 mg/dL or 44.2 µmol/L,Coagulation abnormalities (INR > 1.5 or APTT > 60 s), Ileus (absent bowel sounds), Thrombocytopenia (platelet count < 100,000/ µL), Hyperbilirubinemia (plasma total bilirubin > 4 mg/dL or 70 µmol/L). Tissue perfusion variables; Hyperlactatemia (lactate, >1 mmol/liter.) Decreased capillary refill or mottling. Severe sepsis:[1] Severe sepsis is defined as sepsis plus sepsis-induced organ dysfunction or tissue hypo perfusion (any of the following thought to be due to the infection).(Sepsis-induced hypotension, Lactate above upper limits laboratory normal,, Urine output < 0.5 mL/kg/hr for more than 2 hrs despite adequate fluid resuscitation., Acute lung injury with Pao2/Fio2 < 250 in the absence of pneumonia as infection source., Acute lung injury with Pao2/Fio2 < 200 in the presence of pneumonia as infection source,Creatinine > 2.0 mg/dL (176.8 µmol/L),,Bilirubin > 2 mg/dL (34.2 µmol/L), Platelet count < 100,000 µL,Coagulopathy (international normalized ratio > 1.5). Exclusion criteria: Age: <14years, Decompensated liver cirrhosis, Nephrotic syndrome, Hematological malignancy, Pregnancy, Acute coronary syndrome, the patients who did not give consent.

Data was collected in a pre-designed proforma. Patients' information was obtained using information sheet which includes questionnaire, clinical findings and investigation findings. Severity of sepsis was categorized based on clinical and laboratory parameters recorded during the study. Attempt was made to find association of different outcome variables (i.e. Glasgow Coma Score, mortality, need of ICU support and severity of sepsis) with different clinical and laboratory parameters. For such purpose different statistical tests was utilized considering various measurement levels of variables. Finally, all data compiled together and statistical analyses was carried out by using IBM SPSS Statistics 22.0 (IBM Inc, Chicago, Illinois, USA) & MS-Excel 2016. Significance of relationship between important categorical variables was demonstrated using cross-tables with Pearson's Chi-squared test Statistical significance was deemed while $P < 0.05$ at 95% confidence interval.

RESULTS

During the study period, among 100 patients, 35 patients were in sepsis group where 65 patients were in severe sepsis group according to the clinical practice guideline. Surviving Sepsis Campaign (SSC): International Guidelines for Management of Severe Sepsis and Septic Shock: 2012). These two groups were observed separately in subsequent observation. Distribution of male and female patients in different age groups. It was observed that male was [66 (66%)] and female was [34 (34%)]. The male: female ratio was approximately 1.9:1. Among the study population, more male [24 (36.4%)] belonged to 14-40 years age group while more female [10 (29.4%)] were in 51-60 years age group[Table-I]. Graphical presentation of percentage of sepsis 35% and severe sepsis 65%. Distribution of cases classified as sepsis who fulfilled different clinical and laboratory parameters to qualify the diagnostic criteria of sepsis as proposed by Surviving Sepsis Campaign excluding severe sepsis cases. It was observed that Fever was present in [34 (97.1%)] cases, Heart rate > 90 beats/min in [29 (82.9%)], Tachypnea in [13 (37.1%)], edema [2(5.7%)] Hyperglycemia in [9 (25.7%)], Arterial hypoxemia in [8(22.9%)], Leukocytosis in [31 (88.65%)] and Plasma C-reactive protein was [33 (94.3%)], Decreased capillary refill had [1(2.9%)].WBC count was normal in [4(11.1%)]. There was 7% patient had Leukocytopenia but that was merged with severe sepsis[Table-II]. We found that Sepsis induced arterial hypotension was [26 (40%)], Hyperlactataemia was [29 (44.6%)], Acute oliguria was [12 (18.5%)], Acute lung injury with Pao2/Fio2 < 200 in the presence of pneumonia as infection source was [11 (16.9%)], Creatinine > 2.0 mg/dL was [15 (23.1%)], Serum bilirubin > 2 mg/dL was [5 (7.7%)], Thrombocytopenia was [25 (38.5%)] and Coagulopathy was [14 (21.5%)][Table-III]. Correlation of baseline clinical and laboratory parameters with Glasgow Coma Score recorded at seventh day of admission. Correlation of GCS score at seventh day with initial AMT score appeared to be particularly strong (Rs = 0.663, P<0.001. Statistically significant ($P < 0.05$) positive correlations were noted also systolic blood pressure, mean arterial pressure, respiratory rate, bowel sound and platelet count whereas negative correlations were found for acute oliguria, peripheral oedema, capillary refill time, fluid balance, random blood glucose, International Normalized Ratio, activated partial thromboplastin time, serum creatinine and serum lactate[Table-IV]. Graphical presentation of mortality among different sepsis category distributed according to different age groups and sex. Upper left quadrant shows distribution of mortality among different age groups in male sepsis patients. Upper right quadrant shows distribution of mortality among different age groups in male severe sepsis patients. Lower left quadrant shows distribution of mortality among different age groups in female sepsis patients. Lower right quadrant shows distribution of mortality among different age groups in female severe sepsis patients. It was observed that 7 days mortality was [14 (14%)]. It was found that mortality was [13 (20%)] in severe sepsis group and [1 (2.8%)] in sepsis group. [1 (4.35%)] male mortality, with no female mortality in sepsis group was observed. We also found that the male mortality was [7 (16.2%)] and the female mortality was [6 (27.27%)] in severe sepsis group[Figure-II]. Distribution of cases with different comorbidities in sepsis and sever sepsis and different sepsis category. This figure shows CKD followed by stroke, Hypertension, Diabetes mellitus were more common comorbid condition in severe sepsis group. Whereas COPD followed by IHD and Diabetes Mellitus were more common comorbid condition in sepsis group. Current data did not show any statistically significant distribution of comorbidities between the sepsis categories[Figure-III].

Table-I: Distribution of male and female patients in different age groups (N=100)

Demographic character		Male		Female	
		n	%	n	%
Age group	14-40	24	36.36	8	23.53
	41-50	12	18.18	8	23.53
	51-60	14	21.21	10	29.41
	61-70	12	18.18	5	14.71
	71-80	4	6.06	2	5.88
	>80	0	0	1	2.94

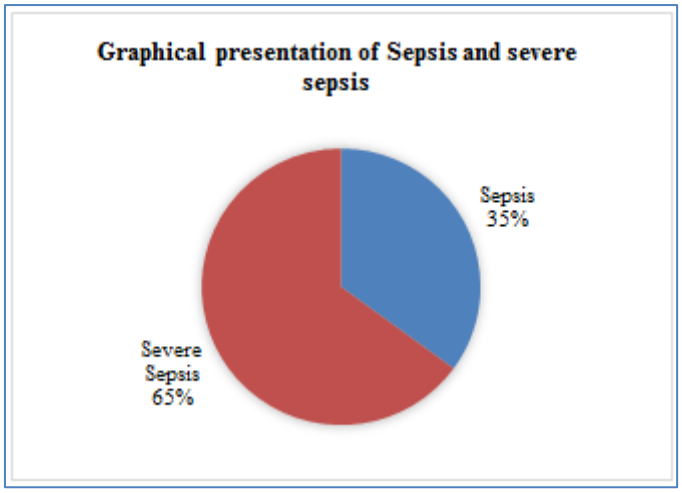

Fig-I: Graphical Presentation of Sepsis and Severe Sepsis (N=100)

Table-II: Distribution of cases fulfilling different clinical and laboratory parameters to qualify the diagnostic criteria of sepsis as proposed by Surviving Sepsis Campaign (n=35)

Criteria of Sepsis (n=35)	Present	
	n	%
General variables		
Fever	34	97.10%
Hypothermia (core temperature < 36°C)	1	2.90%
Heart rate > 90 beats/min or more than two SD above the normal value for age	29	82.90%
Tachypnea (respiratory rate > 20 breaths/min)	13	37.10%
Altered mental status (Abbreviated Mental Test score < 9)	16	45.70%
Significant edema or positive fluid balance (> 20 mL/kg over 24 hr)	2	5.70%
Hyperglycemia (plasma glucose > 140 mg/dL or 7.7 mmol/L) in the absence of diabetes	9	25.70%
Inflammatory variables		
Leukocytosis (WBC count > 12000/microliter)	31	88.60%
Leukocytopenia (WBC count < 4000/microliter)	0	0.00%
Normal WBC count with greater than 10% immature forms	0	0.00%
Plasma C-reactive protein more than two SD above the normal value	33	94.30%
Hemodynamic variables		
Sepsis induced arterial hypotension (SBP < 90 mm Hg, MAP < 70 mm Hg, or an SBP decrease > 40 mm Hg in adults or less than two SD below normal for age)	0	0.00%
Organ dysfunction variables		
Arterial hypoxemia (PaO2/FiO2 < 300)	8	22.90%
Acute oliguria (urine output < 0.5 mL/kg/hr for at least 2 hrs despite adequate fluid resuscitation)	0	0.00%
Creatinine increase > 0.5 mg/dL or 44.2 micromol/L	6	17.10%
Coagulation abnormalities (INR > 1.5 or aPTT > 60 s)	0	0.00%
Ileus (absent bowel sounds)	0	0.00%
Thrombocytopenia (platelet count < 100,000 /microliter)	0	0.00%
Hyperbilirubinemia (plasma total bilirubin > 4 mg/dL or 70 micromol/L)	0	0.00%
Tissue perfusion variables		
Hyperlactataemia (serum lactate > 1 mmol/L)	0	0.00%
Decreased capillary refill or mottling	1	2.90%

Table-III: Distribution of cases fulfilling different clinical and laboratory parameters to qualify the diagnostic criteria of severe sepsis as proposed by Surviving Sepsis Campaign (n=65)

Criteria of Severe sepsis (n=65)	Present	
	n	%
Sepsis induced arterial hypotension (SBP < 90 mm Hg, MAP < 70 mm Hg, or an SBP decrease > 40 mm Hg in adults or less than two SD below normal for age)	26	40.00%
Hyperlactataemia (serum lactate > 1 mmol/L)	29	44.60%
Acute oliguria (urine output < 0.5 mL/kg/hr for at least 2 hrs despite adequate fluid resuscitation)	12	18.50%
Acute lung injury with Pao2/Fio2 < 250 in the absence of pneumonia as infection source	0	0.00%
Acute lung injury with Pao2/Fio2 < 200 in the presence of pneumonia as infection source	11	16.90%
Creatinine > 2.0 mg/dL (176.8 micromol/L)	15	23.10%
Serum bilirubin > 2 mg/dL (34.2 micromol/L)	5	7.70%
Thrombocytopenia (platelet count < 100,000 /microliter)	25	38.50%
Coagulopathy (international normalized ratio > 1.5)	14	21.50%

Table-VI: Correlation of baseline clinical and laboratory parameters with Glasgow Coma Score recorded at seventh day of admission (N=100)

Variables	Spearman's Rank Correlation Coefficient (rs)	Level of significance (P-value*)
Age	-0.12	0.233
Sex	-0.153	0.128
Fever	0.128	0.205
Duration of fever (in days)	0.106	0.292
ATM Score	0.663	<0.001
Dyspnoea	0.152	0.13
Acute oliguria	-0.233	0.019
Jaundice	-0.041	0.019
Pulse	0.11	0.687
SBP	0.255	0.277
MAP	0.31	0.01
Temperature	0.196	0.002
Respiratory rate	0.355	0.05
Peripheral oedema	-0.342	<0.001
Bowel sound	0.248	0.013
Capillary refill time	-0.249	0.012
Fluid balance	-0.416	<0.001
Random blood glucose	-0.339	0.001
TCWBC	0.043	0.673
Platelet count	0.211	0.035
C-reactive protein	0.046	0.648
INR	-0.293	0.003
APTT	-0.37	<0.001
Serum creatinine	-0.238	0.017
Serum bilirubin	-0.041	0.689
Serum lactate	-0.43	<0.001
Blood cultures positivity	0.074	0.463

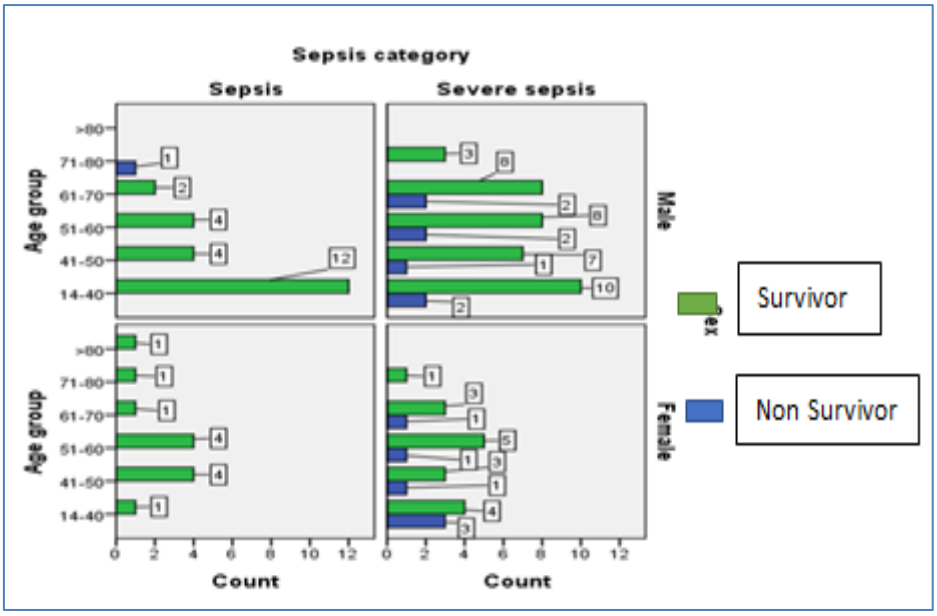

Fig-II: Graphical presentation of mortality among sepsis and severe sepsis according to different age groups and sex

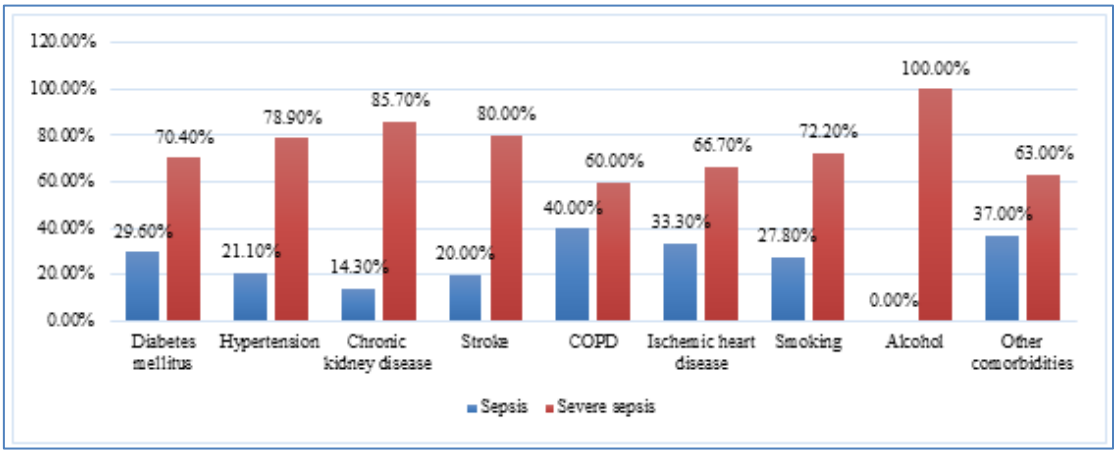

Fig-III: Distribution of cases with different comorbidities in sepsis and severe sepsis

DISCUSSION

In present study male were 66 (66%) and female were 34 (34%). The male: female ratio was approximately 1.9:1. This indicates that sex distribution revealed male predominance among the study population. More male 12 (70%) belonged to 61-70 years age group while more female 24 (41%) were in 51-60 years age group. Overall, 24 (75%) of study population were below 40 years of age. Thirty six percent (36%) patient were smoker. Similarly, an Indian study by Prashanth [10] showed among 100 sepsis patients studied, 60 were male (60%) and 40 were female (40%). The patient's age ranged from 18 to 88 years (mean 41.85). An Indonesian study showed out of fourty two 11(28.6) were more than 60 years and male were 52.4%, female was 47.65%. Which support our study result [9]. Phua J [11]. Observed mean age 59.2 years, male was 61.7%. Another study done by Faruq [12] in Bangladesh obtained that Age (years) 52·3 ± 19·7 were in Survivors and 55·6 ± 15·6 Non-survivors, male were 44% and female were 55% which differ with the current study. This difference result may be due to they included surgical, gynecological and medical cases. There sample were only severe sepsis. In a study from New Delhi by Nasa[13] showed 132 of 387 (34%) patients were sepsis that was similar to our study. Widodo [9] showed, 42 subjects who participated in the study, eleven subjects fulfilled the criteria for sepsis (26.2 %), 20 subjects for severe sepsis (47.6%), and 11 subjects for septic shock (26.2%). B. Khwannimit and R. Bhurayanontachai [14] showed that the incidence of severe sepsis and septic shock increased significantly from 16.6 to 21.6/100 ICU admissions in Thailand hospital. Severe sepsis and septic shock were identified in 87(22.3%) and 303 (77.7%) patients respectively. Martin [15] founded that the number of sepsis cases increased from 164,072 in 1979 to 659,935 in 2000. This was an increase of 13.7 percent per year. Our study as well as other study done by many investigators show incidence of severe sepsis increasing day by day with increased mortality, probably due to late presentation, unable to early recognition and delay of management. With advancement of medical management this

scenario is unexpected. An emergency mass awareness programmed is important to combat the situation.

Mean temperature, respiratory rate, heart rate did not differ among the non-survivors, survivors, sepsis and severe-sepsis respectively. Heart rate more than 90 beat per minute (82.9%) and respiratory rate >20 breath per minute (37.1%) were found in our study population, Widodo [9] in Indonesia recorded heart rate 100% and respiratory rate (95.2%), the result differed with our result because most of our study population were in ventilator support in ICU. There is no similar study on single factor effect. Fever (97.1%) was important and common presenting complaint which duration did not varied among sepsis, severe sepsis, survivors and non-survivors. Cases with sepsis induced arterial hypotension, acute oliguria, coagulation abnormalities, thrombocytopenia, hyperbilirubinemia, and hyperlactataemia were not found in sepsis group as these variables were overlapped in the criteria of sepsis and severe sepsis. Hyperglycemia in absence of diabetes was found 25.7% in this study. But there is no other study result is available about this factor. In sepsis, leukocytosis (WBC count> 12,000/microliter) was 88.6% in our series, 78% in Widodo [9] study in Indonesia. CRP was 94.3% in our study. Yi-Ling Chan [20], recorded 67.1% of infected patients in their study. This disparity due to may be different cut of value. Edema or positive fluid balance (>20 ml/kg/over 24 hrs.) was 5.7%, which was 25.04±22.95 in non-survivor. Positive fluid balance (P<0.001) was significantly associated with mortality and influence the GCS in our study. Acheampong and Jean-Luis Vincent [21] also concluded that persistent of positive daily fluid balance over time was quite strongly associated with mortality in septic patient.

We found that Sepsis induced arterial hypotension was 26 (40%), hyperlactataemia was 29 (44.6%), acute oliguria was 12 (18.5%), acute lung injury with Pao2/Fio2 < 200 in the presence of pneumonia as infection source was 11 (16.9%), creatinine > 2.0 mg/dL was 15 (23.1%), serum bilirubin > 2 mg/dL was 5 (7.7%), thrombocytopenia was 25 (38.5%) and coagulopathy was 14 (21.5%). According to Mikkelsen [8] it was 351(42.3%), 382(46%), 52(6.3%), 94(11.3%), 223(26.9%), 99(11.9%), 127 (15.3%), 91(11%) respectively all result is similar with this study, except acute oliguria and thrombocytopenia.

Fluid balance, Urine output, AMT score, Initial GCS score, pH, Arterial blood bicarbonate, Fraction of oxygen in the inspired air (FIO2) (%), differed significantly among sepsis, severe sepsis, survivors and non-survivors. Correlation of GCS score at seventh day with initial AMT score appeared to be particularly strong (Rs = 0.663, P<0.001.Statistically significant (P < 0.05) positive correlations were noted also systolic blood pressure, mean arterial pressure, respiratory rate, bowel sound and platelet count whereas negative correlations were found for acute oliguria, peripheral oedema, capillary refill time, fluid balance, random blood glucose, International Normalised Ratio, activated partial thromboplastin time, serum creatinine and serum lactate. In this series blood culture was positive in 7 (8.2%) only, whereas throat swab culture in 5(83.3%) tracheal aspirate culture in 16 (72.7 %.) were positive. *Pseudomonas spp* was commonest organism identified in throat swap culture. Most of the organism isolated in Tracheal aspirate were *Pseudomonas spp.* 5 (22.7%), *E. coli* [4 (18.2%)], Gram-Positive cocci 3 (13.6%), *Acinetobacter* 2 (9.1%) and *Klebsiella spp.* 2 (9.1%). Fungal isolate (*Candida spp*.) were positive in blood 1 (1.2%) and urine 1 (1.9%). The similar result was found in study done by Widodo [9] in Indonesia, Zhou [15] in China, Prashanth [10] in India, B. Khwannimit and R. Bhurayanontachai [14] in Thailand, Zanon [16] in Brazil. In our study Fungimia was 1.2%, Zanon showed [16] 1.3% in their study.

In this series most of the patient had comorbidities. Of the comorbidity DM, HTN, CKD, CVD, COPD, IHD present in 27(27%), 19(19%), 7(7%), 15(15%), 5(5%), 6(6%) respectively. Oppert M [17] differs with this result DM in 100 (52.2%), CKD in 37(20%), CVD in 50 (29.7%), hypertension in 170(85%), COPD in 50(14.6%) and Widodo [9] showed similarity with DM in 14(33.3%) and CVD in 5 (11.9%) but differ with other co-morbidities. This dissimilarity may be due to, in our study we enrolled medical conditions only and excluded Hematological malignancy, CLD, Nephrotic syndrome, acute coronary syndrome, pregnancy and trauma and surgical patients. But they enrolled medical, surgical and gynecological patients in their study. It was observed that 7 days mortality was 14 (14%). It was found that mortality was 13 (20%) in severe sepsis group and 1 (2.8%)] in sepsis group. We also found that the male mortality was 7 (16.2%) and the female mortality was 6 (27.27%) in severe sepsis group. Blanco J [18] reported that the mortality in 1st 48 h was 14.8 % which is consistent with our result. Zanon [26] showed 22.2% mortality in severe sepsis group which is consistent with our study also but 10.1% mortality in sepsis group which differ from us that was 2.8%. Another study demonstrated a mortality rate of 11(28%) within first 48 hours. The highest mortality rate was found in the age group ≥65 years. The study demonstrated a higher incidence of sepsis in men compared to women, Pradipta [19] which differs with our study. In terms of mortality rate, Sudjito [22] show a higher mortality rate in women than in men which support our study result. Faruq [12] observed Most (78·9%) of the patients died within 28 days of admission.

Limitations of the Study

The study population was selected from Medicine department and intensive care unit of a single tertiary level centre in Dhaka city. So that the results of

the study may not reflect the exact picture of the country. The present study was conducted within a very short period of time. Small sample size was also a limitation of the present study. Another limitation was that patients were followed up only once at the end of first week after enrolment in the study. It was too small compared to severe sepsis patient population of Bangladesh, so an accurate epidemiology, clinical features, laboratory parameter and hospital outcome of sepsis patient was difficult to obtain from this study.

CONCLUSION & RECOMMENDATION

From this study, it is concluded that severe sepsis is very common at a tertiary level hospital in Dhaka. Sever sepsis kills many of our patient silently. Elderly patients are suffering more in sepsis in with many comorbid condition. Clinical symptom, sign and laboratory profile are varying with individual patients. Mortality is higher among female sepsis patients. It is prism that the significant reason for the higher mortality may be due to late presentation in the health care centre, to delay in diagnosis and subsequent delay in initiation of treatment. Initial GCS and fever duration can help to predict need for ICU support. Serum Lactate, Platelet count, APTT, INR and Arterial blood bicarbonate are important investigations for assessing severity of sepsis. Fluid balance, urine output, AMT score, initial GCS score, pH, arterial blood bicarbonate, FIO2 are strongly correlated with the severity of sepsis and mortality and therefore, should be extensively monitored. Female patients with severe sepsis need more intensive care due to presence of higher mortality. This study can serve as a pilot to a much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for future use.

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