



Demographic Profiles and Sources of Infection among Septic Patients admitted at ICU of a Public Hospital in Dhaka City

Subroto Kumar Sarker¹, Mohammad Saiful Azam², Montosh Kumar Mondal³, Uday Kumar Goswami⁴, Mohammad Mohsin⁵

¹Assistant Professor, Department of Critical Care Medicine, Dhaka Medical College, Dhaka, Bangladesh; ²Junior Consultant (Medicine),; ³Associate Professor, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh; ⁴Assistant Professor, Department of Oral and Maxillofacial Surgery, Dhaka Medical College, Dhaka, Bangladesh; ⁵Assistant Professor, Department of Critical Care Medicine, Dhaka Medical College, Dhaka, Bangladesh

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Abstract

Background: Sepsis occurs due to different sources of infection. **Objective:** The purpose of the present study was to see the demographic profiles and sources of infection among septic patients admitted at ICU of a public hospital in Dhaka City. **Methodology:** This descriptive cross sectional study was conducted in the Intensive Care Unit of the department of Anaesthesia Analgesia, Palliative and Intensive Care Medicine, Dhaka Medical College Hospital, Dhaka, Bangladesh over a period of 12 months starting from January 2016 to December 2016. All patients admitted to ICU with the features of severe sepsis and septic shock according to SSC guidelines with the age of more than or equal to 18 years in both sexes were set as selection criteria for this study. Instruments required to perform the study were data sheet addressing the demographic data, primary source of severe sepsis and organ dysfunctions. BSepsis was confirmed by detection of serum lactate and culture of blood. **Result:** A total number of patients was 69 cases. The mean with SD was 38.72 ± 13.43 with the age range of patient 18 to 65 year. The male and female ratio was 1.7:1. The most common source of infection were abdomen which was 30(43.5%) cases followed by CNS, respiratory tract, urogenital tract and GIT which were (21.7%) cases, (14.5%) cases, (17.4%) cases and (2.9%) cases respectively. Among the 69 patient 20 patients were blood cultures positive, 15 patients were pus culture positive, 10 patients were urine/catheter tip culture positive. **Conclusion:** In conclusion young adult male is most commonly suffering from sepsis in ICU mostly due to infection of abdomen. [Bangladesh Journal of Infectious Diseases, December 2020;7(2):40-43]

Keywords: Demographic profiles; sources of infection; septic patients; ICU

Correspondence: Dr. Subroto Kumar Sarker, Assistant Professor, Department of Critical Care Medicine, Dhaka Medical College, Dhaka, Bangladesh; Email: subrotormc@gmail.com; Cell no.: +8801711066763

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Introduction

Sepsis is a major cause of morbidity and mortality. It is the second leading cause of death worldwide¹. The incidence of severe sepsis and the number of sepsis related death is increasing. Sepsis is now the 10th most common cause of death in the united states². The definition of severe sepsis and septic shock has been formulated since early 1990s and has been accepted worldwide³. So when sepsis is associated with hypo perfusion or single organ dysfunction it becomes severe sepsis. When hypoperfusion persists in spite of adequate fluid resuscitation and requiring vasopressors, it is called septic shock⁴.

Sepsis is a major challenge in medicine. Massive resources have been invested in developing and evaluating potential therapies and considerable effort has been undertaken to understand the systemic inflammation and multiple-system organ failure characteristics of severe sepsis⁵. An early strategy of quantitative resuscitation enables a decrease in mortality rate of septic patients, but few data are available for prolonged intensive care unit (ICU) strategy⁶.

When an organ system begins to fail because of sepsis, the condition is considered severe and is one of the leading causes of death in the critically ill, with the mortality rate of 28.0 to 55.0% cases⁷. The purpose of the present study was to see the demographic profiles and sources of infection among septic patients admitted at ICU of a public hospital in Dhaka City.

Methodology

This was descriptive cross sectional study. This study was conducted in the Intensive Care Unit of the department of Anaesthesia Analgesia, Palliative and Intensive Care Medicine, Dhaka Medical College Hospital, Dhaka. This study was carried out over a period of 12 months starting from January 2016 to December 2016. All adult patients admitted in the Intensive Care Unit, with the features of severe sepsis and septic shock who fulfilled the selection criteria. Purposive sampling technique was applied for collection of the sample. All patients admitted to ICU with the features of severe sepsis and septic shock according to SSC guidelines with the age of more than or equal to 18 years in both sexes were set as selection criteria for this study. Appropriate data were collected by using a preformed data sheet. Other necessary data were collected from history sheet and investigation

papers. Instruments required to perform the study were data sheet addressing the demographic data, primary source of severe sepsis and organ dysfunctions. All patients who were admitted to the ICU and fulfill the SIRS criteria during a 12-month period were examined and data was recorded in the preformed structured data sheet. After meeting inclusion criteria and who fulfill the diagnostic criteria for sepsis was evaluated. Sepsis is defined as the presence of infection together with systemic manifestations of infection i.e. systemic inflammatory response syndrome (SIRS). Following the detailed information, informed written consent of the patient and/or guardian was obtained. Then detailed history and physical examination were performed and primary source of infection was identified. After that arterial and central lines were inserted. Then arterial and central venous blood was collected for analysis. Then blood sample for serum lactate from arterial line was collected and specimen for culture was collected from primary source of infection. Data from each patient was collected in structured data sheets individually. Finally all data was compiled together and data were presented as mean with SD. All statistical analysis was performed by using the Statistical Package for Social Sciences version 16 for Windows (SPSS Inc., Chicago, Illinois, USA). Prior to the commencement of this study, the research protocol was approved by the Ethical Review Committee of the Dhaka Medical College.

Result

A total number of patients was 69 cases. The mean with SD was 38.72 ±13.43 with the age range of patient 18 to 65 year. Majority of the patients were I the age group of 31 to 40 years which was 21(30.4%) followed by 21 to 30 years, 51 to 60 Years and 41 to 50 Years which were 18(26.1%) cases, 13(18.8%) cases and 8(11.6%) cases respectively (Table 1).

Table 1: Distribution of Patients by Age (n=69)

Age Group	Frequency	Percent
≤20 Years	5	7.3
21 to 30 Years	18	26.1
31 to 40 Years	21	30.4
41 to 50 Years	8	11.6
51 to 60 Years	13	18.8
More than 60 Years	4	5.8
Total	69	100.0
Mean ± SD	38.72 ±13.43	
Range (min-max)	18.00 to 65.00	

In this study male was predominate than female which was 44(63.8%) cases and 25(36.2%) cases respectively. The male and female ratio was 1.7:1 (Table 2).

Table 2: Distribution of patients by sex (n=69)

Gender	Frequency	Percent
Male	44	63.8
Female	25	36.2
Total	69	100.0

The most common source of infection were abdomen which was 30(43.5%) cases followed by CNS, respiratory tract, urogenital tract and GIT which were (21.7%) cases, (14.5%) cases, (17.4%) cases and (2.9%) cases respectively (Table 3).

Table 3: Distribution of Patients according to Source of Infection (n=69)

Source of Infection	Frequency	Percent
Abdomen	30	43.5
CNS	15	21.7
Urogenital tract	12	17.4
Respiratory tract	10	14.5
GIT	2	2.9
Total	69	100.0

Among the 69 patient 20 patients were blood cultures positive, 15 patients were pus culture positive, 10 patients were urine/catheter tip culture positive, 5 patients were sputum/tracheal aspirate culture positive and 5 patients were CSF culture positive. Total 14 patients were culture negative (Table 4).

Table 4: Specimen of the Primary Source of Infection in Septic Patients

Specimen for culture	Culture Positive
Blood	20
Pus	15
Urine/ Catheter tip	10
Sputum/ Tracheal aspirate	5
CSF	5

Discussion

Severe sepsis and septic shock are very common in ICU in this study. A total 69 of patients fulfilled the criteria of severe sepsis and septic shock during the study period. The mean and SD of age in this study were 42.0±10.0 years. Commonest age range was 31 to 40 (30.4%) whom developed severe sepsis

and septic shock.

Alberti et al⁸ epidemiologic studies of severe sepsis are difficult to compare, not only because their results are influenced by their date of implementation and the type of ICU analyzed, but also because severe sepsis is a highly heterogeneous condition.

Guidet et al⁹ compared non-severe sepsis patients with severe sepsis patients and found that severe sepsis patients were significantly older and had male predominance. In this study 63.8% (n =44) were male & 36.2% (n =25) were female. Most of the sepsis patients of this study were from surgical, casualty, gynae & obstetric and medicine ward. Probably younger age in my study was due to poor isolation facility and poor hygienic conditions and lack of awareness of these patients increases septic condition even in younger ages.

In this study, the most common source of infection was abdomen (43.5%), CNS (21.7%), respiratory tract (14.5%), urogenital tract (17.4%) and GIT (2.9%). Zahorec et al¹⁰ conduct epidemiology of sepsis in Slovak Republic and revealed respiratory and renal dysfunction was the most frequent organ dysfunctions in 52.0% and 42.2%, respectively and the most frequent sites of infection were the respiratory tract (62.9%) and the abdomen (25.3%).

In another study, it has been reported that the main source of sepsis is urinary tract infections, followed by skin/soft tissue infections, lower respiratory tract infection and gallbladder/bile ducts infections¹¹. These four sources represented almost 91.0% of the episodes reported. Previously published studies¹²⁻¹⁴ found that the most common source of sepsis is lower respiratory tract infections, intra-abdominal, and urinary tract infections and Gram-negative microorganisms from genitourinary tract and intra-abdominal infections are the leading causes of sepsis.

Conclusion

In conclusion young adult age group is the maximum number of patients who are suffering from sepsis. Furthermore male is predominant than female. Considering the source of infection the patients with infection of abdomen are the main source of infection; furthermore central nervous system and respiratory infection are also the important sources of infection among the ICU patients. Large scale multicenter study should be carried out to see the real scenario of the country.

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