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FREQUENCY AND SOURCE OF INFECTION IN PATIENTS WITH SEPSIS

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Abstract:

Objective: *To determine the frequency and source of infection in patients with sepsis.*

Patients and Methods: *This one year cross sectional study was carried at tertiary care teaching hospital. The criteria for selection is any patient of ≥12 years of age, either gender admitted in ward who came under the criteria for sepsis accordingly as systemic inflammatory response syndrome due to infection as existent etiology or at least with clinical evidence of infection while the necessary specific and relevant investigations were also advised and sort accordingly whereas the blood and urine sample for bacterial culture / sensitivity was collected and sent soon to confirm the diagnosis. The frequency and percentages was calculated while the numerical statistics were used to compute mean ±SD.*

Results: *During one year study period total fifty patients diagnosed with sepsis with the mean age ±SD for whole population was 40.84±6.85 years, of fifty individuals 28 (56%) were males and 22 (44%) were females and majority belonged to rural population (60%). The organ system dysfunction identified were coagulopathy (50%), central nervous system (40%), hepatic (38%) and renal (42%). The common source of infection detected were Respiratory tract infection (16%), urinary tract infections (16%), intravenous catheters (16%) and urethral catheterization (18%) respectively.*

Conclusion: *The study detected higher incidence of infection with gram negative pathogen was common microorganism while the common source of infections identified urethral catheterization (18%), intravenous catheters (16%), urinary tract infections (16%) and respiratory tract infections (16%).*

Keywords: *Sepsis, Blood culture, Source of infection & Systemic inflammatory response syndrome.*

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INTRODUCTION:

Sepsis common cause of morbidity and mortality in hospital settings and present as systemic inflammatory response syndrome (SIRS) due to infection (underlying etiology) or clinical evidence for infection [1-3]. The presence of ≥ 2 components out of 4 criteria as b temperature of body ≥38^{0}C or <36^{0}C, WBC count >12,000 cells/cumm or <4000 cells/cumm, the rate of heart and respiration > 90 b/min & >20 breaths / minute respectively [4-6]. If organ dysfunction persists along with above mentioned criteria and arterial hypotension will be labeled as septic shock and severe sepsis [7]. Previous data suggests the rising incidence of sepsis worldwide and simultaneously the rate of mortality remained raised despite of advance management of sepsis [8]. The risk for prolonged illness and delayed recovery might be the aging of the population indwelling catheters, chronic disorders, antimicrobials misuse, mechanical devices and prolonged bed bound and hospital stay [9, 10]. This study was attempted to conduct in our population and by keeping this in mind the current study was planned to conduct at tertiary care teaching hospital to estimate the frequency and organ dysfunctions associated due to the sepsis in our population and health institute so that early effective and appropriate measure can be taken to combat the spread of infection at life threatening level.

PATIENTS AND METHODS:

This one year cross sectional study was carried at tertiary care teaching hospital. The criteria for selection is any patient of ≥12 years of age, either gender admitted in ward who came under the criteria for sepsis accordingly as systemic inflammatory response syndrome due to infection as existent etiology or at least with clinical evidence of infection while the necessary specific and relevant investigations were also advised and sort accordingly whereas the blood and urine sample for bacterial culture / sensitivity was collected and sent soon to confirm the diagnosis. The detail history was taken and complete data was obtained during the stay in the hospital and was saved on proforma after taking the consent from the parents / next to kin. The exclusion criteria of the study were the patients with no evidence of infection and non cooperative subjects / attendants who didn't want to participate in the study. The SPSS version 16 was used to manipulate the data as frequencies and percentages.

RESULTS: During one year study period total fifty patients diagnosed with sepsis with the mean age ±SD for whole population was 40.84±6.85 years, of fifty individuals 28 (56%) were males and 22 (44%) were females. The demographical, clinical and etiological profiles of the patients are shown in Table 1-2.

TABLE 01: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF THE PATIENTS

AGE (years)	**FREQUENCY (N=50)**	**PERCENTAGE (%)**
12-19	04	8
20-29	08	16
30-39	10	20
40-49	10	20
50-59	12	24
60+	06	12
GENDER		
Male	28	56
Female	22	44
RESIDENCE		
Urban	20	40
Rural	30	60
Organ dysfunction		
Coagulopathy	25	50
Central nervous system	20	40
Hepatic	19	38
Cardiovascular system	13	26
Respiratory system	14	28
Renal system	21	42
DURATION OF Illness		
1-3 days	15	30
3-7 days	17	34
≥ 7 days	18	36

TABLE 02: THE FREQUENCY & PATTERN FOR SOURCE OF INFECTION

Source of Infection	Frequency (N=50)	Percentage (%)
Respiratory tract infection	08	16
Skin infection	04	08
Urinary tract infections	08	16
Gastrointestinal & liver	05	10
Intravenous catheters	08	16
Urethral catheterization	09	18
CNS (meningitis)	04	08
Human immunodeficiency virus	01	02
Puerperal sepsis	02	04
Infective endocarditis	01	02

DISCUSSION:

The pathological process for sepsis that results in multi organ dysfunction is a complicated process & both pro as well as anti-inflammatory compounds are identified to be involved. The two common elements responsible for multi organ dysfunction are prolonged vasodilatation leads to endothelial cellular injury & hypotension results in organ malfunction [11, 12]. During one year study period total 50 patients were enrolled as the cases of sepsis. In present study the incidence of the disease were found to be high in patients with 30 plus year age group with strikingly predominant involvement of the male gender (56%) with females comprising (44%) with a mean age of 40.84±6.85 years. The observations are in concordance with Guidet B, et al [13] who observed that the incidence of sepsis steeply increases above the age of 40 years and frequently involving male gender. While Silva, E et al [14] observed that the mean age for patients with sepsis was 65.21 years with 58.7% of them being male population. Silva E, et al [14] also detected that the frequency of chronic disorders coexisting are as follows: hypertension (35%), diabetes mellitus (25%), malignancy (20%), COPD (17%), chronic renal failure (8%), liver cirrhosis (5%) and CCF (6%).

Gestel AV, et al [15] observed that diabetes, congestive cardiac failure, history of cerebrovascular accidents and chronic renal disease were predominant disorders commonly identified in patients with sepsis. The present study population also revealed co-morbidities as chronic obstructive pulmonary disease (COPD), diabetes, chronic cerebrovascular accident (CVA), hypertension and malignancy in patients with sepsis. In present study we found 58% of patients having positive blood culture with predominant gram negative growth, pseudomonas and E. coli were the most common pathogens and staphylococcus aureus the common gram positive microorganism. Guidet B, et al [13] observed positive blood cultures in 37% of patients with sepsis with pseudomonas being the most common gram negative pathogen and staphylococcus as the common gram positive microorganism which is consistent with our findings. The common source of infections identified in present series is urethral catheterization (18%), Intravenous catheters (16%), urinary tract infections (16%) and respiratory tract infections (16%) and it is consistent with the findings of the former studies [16-18].

CONCLUSION:

Our findings were also in accordance with previous studies, additionally detected higher incidence of infection among male population and blood cultures was positive in 58% patients with gram negative pathogen was common microorganism while the common source of infections identified in present series is urethral catheterization (18%), Intravenous catheters (16%), urinary tract infections (16%) and respiratory tract infections (16%).

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