

A Cross Sectional Study to Estimate Postoperative Findings and Management of SIRS after Operation at Sher-E-Bangla Medical College

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ABSTRACT

Introduction: The concept of a systemic inflammatory response syndrome (SIRS) to describe the complex pathophysiologic response to an insult such as infection, trauma, burns, pancreatitis, or a variety of other injuries.

Objective: In this study our main goal is to evaluate the postoperative findings and management of SIRS after operation.

Method: This cross-sectional study conducted at Department of Surgery, Sher-E-Bangla Medical College Hospital, Barisal from July 2006 to June 2007. Total 50 patients attending at surgery in Patient Department of Sher-E-Bangla Medical College Hospital, Barisal were enrolled in this study where male patients were 35 and female were 15 in number.

Results: During study maximum 24.0% patients of SIRS were belonged to 55-64 years age group and 60% develop sepsis and 30% develop severe sepsis. Also found that maximum mortality rate in MODS, next from severe sepsis.

Conclusion: Early recognized SIRS cases are easy to

manage and in post-operative period of abdominal surgery may easy to manage if early detection is possible.

Keyword: Systemic Inflammatory Response Syndrome, Sepsis, MODS.

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INTRODUCTION

The clinical response to tissue injury and acute illness varies between patients and may range from mild pyrexia and tachycardia to progressive multi organ failure and death. The magnitude of the response is dependent in part at least on the scale of injury, although other factors such as sepsis, immune competence and physiological reserve also play a part. It is increasingly recognized that the clinical responses to injury and critical illness are similar irrespective of the nature of the insult. The systemic inflammatory response syndrome (SIRS) which describes a sepsis-like state in the absence of identifiable infection, may be seen following trauma, burns, crush syndrome, massive transfusion and perfusion injury.¹

Tissue injury or infection leads to widespread activation of both cellular and humoral mechanism of inflammation, including the kinin, complement and coagulation cascades, this produces intense local reaction but frequently also produces systemic effects Sepsis describes the early clinical features which occur when infection is the initiating factor of the MODS. The sequence of failure of individual organs often follows a predictable pattern with pulmonary failure occurring first followed by hepatic, intestinal, renal, and finally cardiac failure.

The mortality rate of MODS is directly related to the number of organs that fail. With one organ the mortality is 40%; with two, 60%; with three organs, more than 90%. Organ dysfunction often has an insidious onset. At an early stage, sub-clinical organ dysfunction is often suspected; at this stage active resuscitation and dealing with causative factors are likely to have beneficial effects. Related infection before it provokes the SIRS cascade is vital.² Appropriate use of prophylactic antibiotics hi bowel surgery or trauma is important, but inappropriate and postoperative errors in technique or clinical judgment are major contributing factors in more than 50% of patients with multiple organ dysfunction. In this study our main goal is to evaluate the postoperative findings and management of SIRS after operation.

OBJECTIVE

General Objective

- To evaluate the postoperative findings and management of SIRS after operation.

Specific Objective

- To identify different variation of SIRS.
- To detect mortality rate for different variation in SIRS.

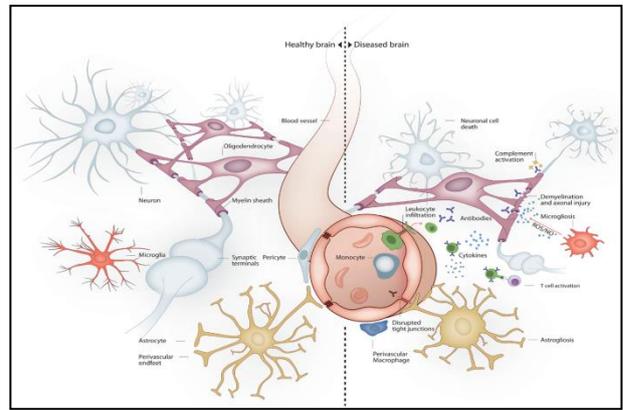
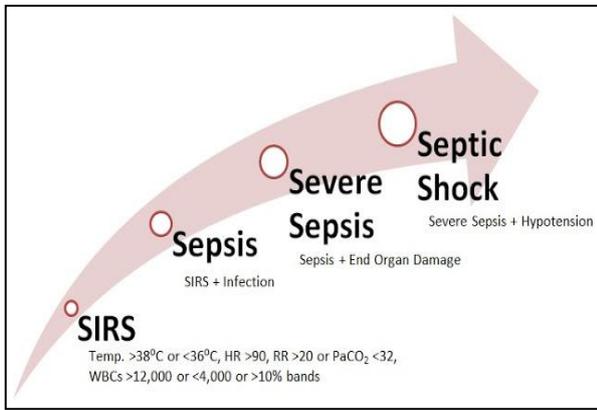


Figure 1a and 1b: SIRS symptoms and effect in human brain³

METHODOLOGY

Study Type

This study was a cross sectional study.

Study Period and Place

Study was conducted at Department of Surgery, Sher-E-Bangla Medical College Hospital, Barisal from July 2006 to June 2007.

Study Population

Patients attending the surgery at the Department of Sher-E-Bangla Medical College Hospital, Barisal.

Sample Size

Total 50 patients attending the surgery at the Department of Sher-E-Bangla Medical College Hospital, Barisal were enrolled in this study, where male patients were 35 and female were 15 in number.

Data Analysis

During the study all the data were checked and edited after collection. Then the data were entered into computer and statistical analyses of the results were obtained by using window-based computer software devised with Statistical Packages for Social Sciences (SPSS-13) (SPSS Inc, Chicago, IL, USA). The results were presented in tables and figures, the statistical terms included in this study were mean, median, standard deviation, percentage.

RESULTS

In figure-2 shows the age distribution of the patients where maximum 24.0% patients of SIRS were belonged to 55-64 years age group followed by 22.0% within 45-54 years age group, 16.0% 35 to 44 years and above 65 years of each, 12.0% within 25 to 34 years and 10.0% 15 to 24-year age group.

In table-1 shows time interval to develop SIRS of patients after they had operation where 0 (zero) indicate the operative day and Fifty percent patients had developed SIRS within third to fifth post-operative day.

In figure-3 shows different variation of SIRS where 60% out of all develop sepsis and 30% develop severe sepsis and only 20% develop MODS. In table-2 shows distribution of the patients by given treatment where several antibiotic and steroid used followed by 4th Generation cephalosporin used 40%, 3rd Generation cephalosporin + Metronidazole, steroid used 70%.

In figure-4 shows hospital stay in post-operative period where most of the patients stayed three weeks (15-22 days).

In table-3 shows distribution of the patients by survival rate (n= 50) where 19 out of 50 patients is death. Total mortality rate is 38%. In figure-5 shows mortality rate for different variation in SIRS (n=19) where maximum mortality rate in MODS, next from severe sepsis.

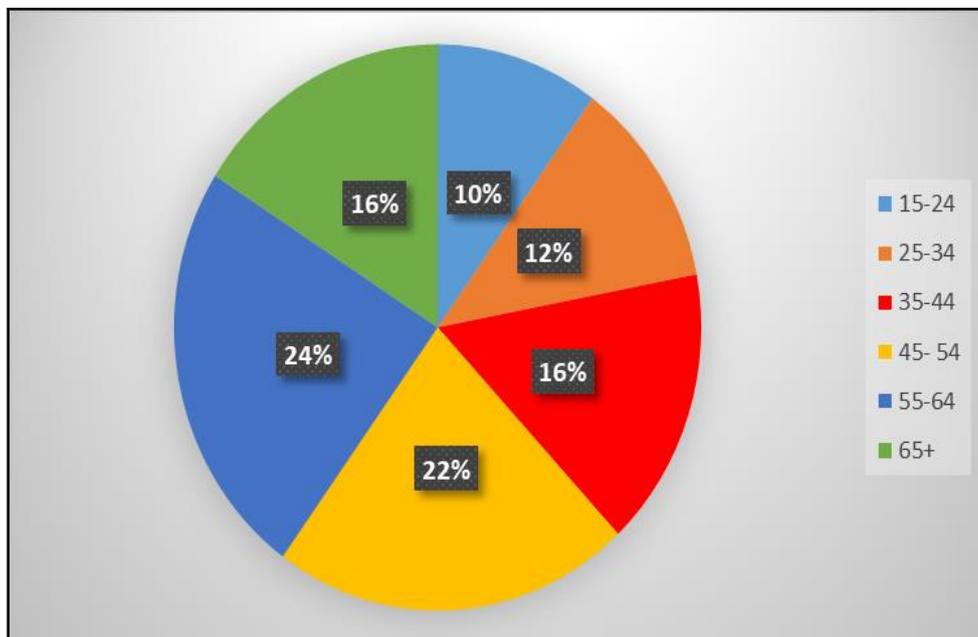


Figure 2: Age distribution of the patients.

Table 1: Time interval of patients develop SIRS patients after operation

Time (days)	Frequency	Percentage
0-2	12	24%
3-5	25	50%
6-8	10	20%
9+	3	6%

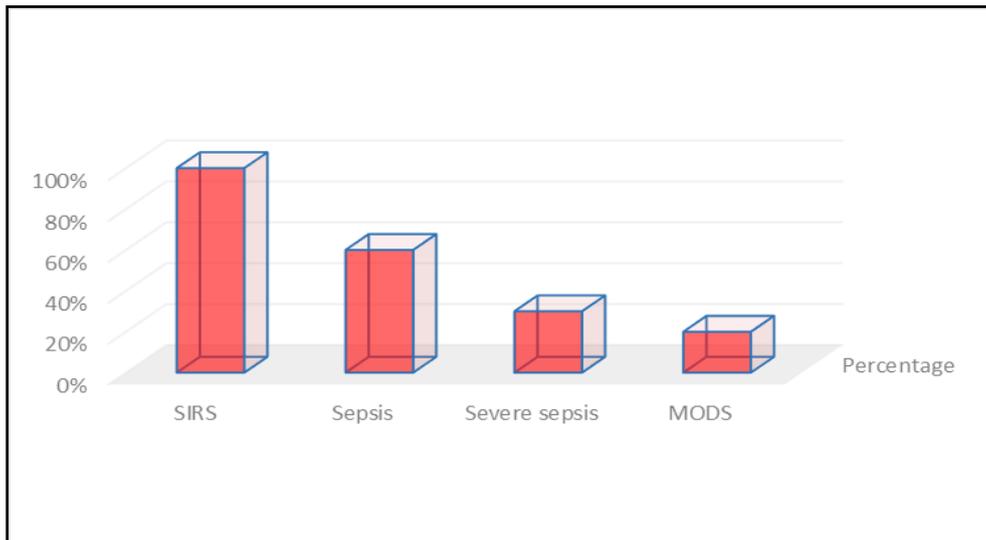


Figure 3: Different variation of SIRS

Table 2: Distribution of the patients by given treatment

Treatment	Mean ± SD
Intravenous fluid	
➤ Hartmann's solution	10.2±2.1
➤ DNS	8.2±2.9
Treatment	Percentage
Antibiotic	
➤ 4 th Generation cephalosporin	30%
➤ 3 rd Generation cephalosporin + Metronidazole	36%
➤ 2 nd Generation cephalosporin 4- Metronidazole	20%
➤ 3 rd Generation cephalosporin alone	10%
➤ 3 rd Generation cephalosporin + Gentamicin	4%
Steroid	70%
Ion trophic agent	40%

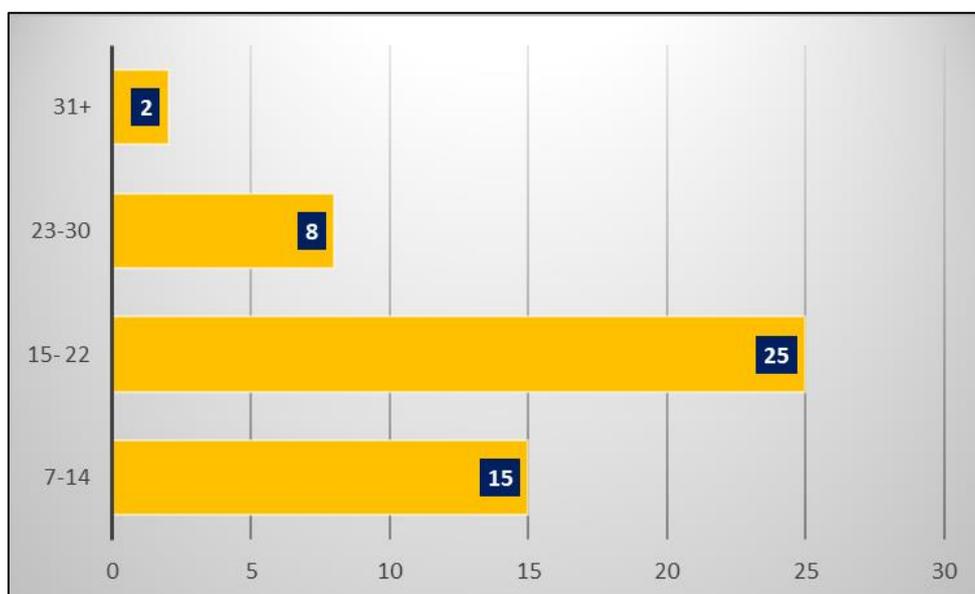


Figure 4: Duration of hospital stay

Table 3: Distribution of the patients by survival rate (n= 50)

Outcome	Frequency	Percentage
Alive	31	64%
Death	19	38%

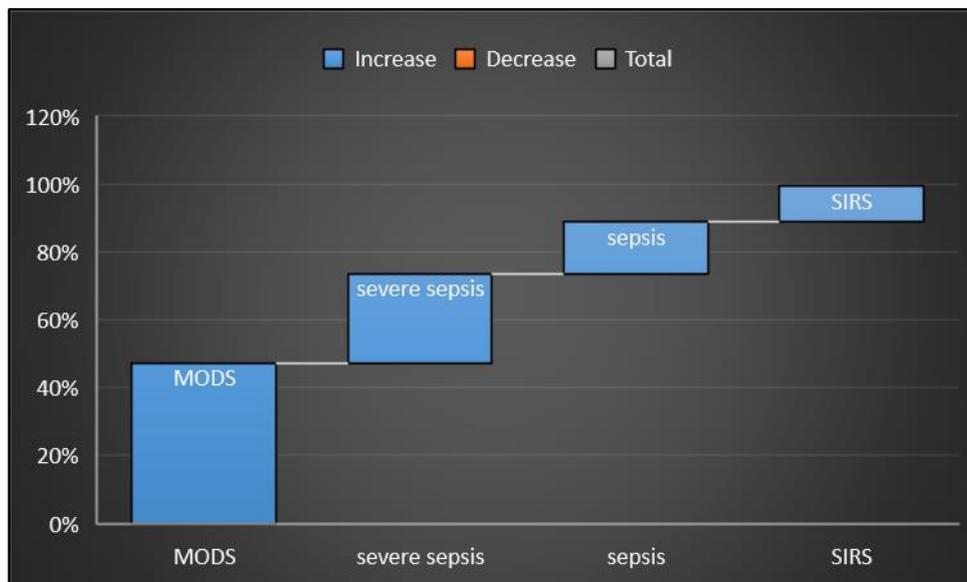


Figure 5: Mortality rate for different variation in SIRS (n=19)

DISCUSSION

Systemic inflammatory response syndrome (SIRS) is an inflammatory state affecting the whole body. Time interval of patients, who develops SIRS after operation, variation of SIRS, distribution of the patients by given treatment, duration of hospital stay, survival and mortality rate for different variation in SIRS rate are the six most significant principals that evaluate the clinical features and management of SIRS. Age influences the development of SIRS. In early ages, usually diseases are less, may be due to good nutritional status and also for highly active immunity system. In middle and old ages, people develop more diseases and so more SIRS. 24.0% patients of 55-64 years, 22% of 45-54 years, 16% in both 35-44 and 64+ age groups had developed SIRS. Mean age of the study group was 48.82 (+16.75). All patients were within 15 to 80 years age range. In one article reported that mean (SD) age of all patients was with range of 18 to 44 years. Maximum patients were belonged to 18 to 26 years age group followed by 28.0% to 36 to 44 years age group.⁴ SIRS may be infectious origin or noninfectious origin. Other cases reported that it is usually infection related. When SIRS is due to infection, it is called sepsis; sepsis along with tissue hypoxia is called severe sepsis; severe sepsis associated with organs failure is known as MODS where sixteen patients developed a septic complication during the first 5 postoperative days. In that group, four patients had developed septic shock, four severe sepsis, and eight sepsis without any organ dysfunction.⁵ In the present series out of 50 SIRS patients 60% had developed sepsis, 30% severe sepsis, and 20% MODS. Time duration also a factor in post-operative period to develop SIRS. Early development of SIRS may be due to diseases itself or late presentation of the cases. In the present series 24% patients had developed SIRS on first or second POD, 50% on 3rd to 5th POD, 20% on 6th to 8th and 6% on 9th, 1 + POD. Early cases recovered early but late cases were

grave. Lately appearance cases were usually older age group and malignant. Hospital stay varies according to the severity of the diseases. 30% patients stayed 7-14 days, 50% stayed 15-22 days, 16% patients stay 23-30 days and 4% for 31+ days. Mean hospital stay was 18.8±7.6 days with a range of 7 to 45days. In one report said that mean ICU length of stay was 5.5 ± 0.2 days, and average hospital length of stay was 22.4 ± 0.6 days. In present study, total mortality rate was only 38%. Out of them 47.36% died of MODS, 26.31% of severe sepsis, 15.18% of sepsis and 10.52% of SIRS.

LIMITATION

In this study sample size was small.

RECOMMENDATIONS

- Post-operative follow-up/ monitoring: Post-operative follow-up is very sensitive part of a good operation. The advantages of good surgery may fail if post-operative care is sub-optimal. Day to day changes, record keeping, early detection of any complication and appropriate management of problems is pre-requisite to good operation and decrease complication like SIRS.
- Inter communication: Sometimes a SIRS patient requires advice from others department like medicine, radiology, cardiology, oncology, orthopedic etc. So good inter communication among others department can prevent SIRS at an early stage.
- Population- hospital ratio: Good health depends on good national policy, adequate numbers of health-related stuff adequate numbers of hospitals depending on total population and availability of good quality of surgical instruments and medicines.

CONCLUSION

After examination of many data it was clear that early recognized SIRS cases are easy to manage and in post-operative period of abdominal surgery may easy to manage if early detection is possible. Good team work with adequate modern equipment's and ICU facility can reduce SIRS related mortality and morbidity. Public consciousness about health, various national programs about health and advertisement in electronic media can reduce health related complication. For further analysis qualitative and quantitative data is needed for better outcome.

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