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Research Report

Medical Audit of the Management of Patients with Sepsis in the Intermediate Care Unit of Department Internal Medicine School of Medicine Airlangga University/Dr. Soetomo Hospital

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ABSTRACT

Sepsis and septic shock is one of the highest causes of death in patients treated in hospitals. Research Objectives: to evaluate the quality of the management of sepsis patients in Intermediate Care Unit, Department of Internal Medicine Dr. Soetomo Hospital Surabaya, Indonesia. This study was a retrospective study to re-evaluate the patient medical record. The number of patients treated: 275 patients, sepsis patients: 80 patients, the number of patients who entered the study 50 patients, 30 (60%) female and 20 (40%) men, most age groups aged 60 -70 years (32%), Mean 54 Median 56. Diagnostic accuracy according to the criteria of sepsis 45 (90%) patients, compliance with taking blood culture 2 (4%) patients, appropriate antibiotic selection 49 (98%) patients, the number of patients who should not be given antibiotics (4 patients), but given the antibiotic is 3 (75%) patients, the number of patients who should be given antibiotics (46 patients) but were not given antibiotics 1 (2%) patient. The reason of patients discharged: 27 had died (54%), 13 cured (26%), not yet recovered 10 (20%). The reason of patients discharged forcibly: to feel recovered 2 (20%), the condition gets worse 3 (30%), no cost 2 (20%), not clear 3 (30%). Patients with sepsis remain a big problem, and it still needs to improve the management of sepsis on existing guidelines.

Key words: Sepsis, Guideline, Medical audit

INTRODUCTION

Sepsis and septic shock is one of the highest causes of death in patients treated in hospitals. Severe sepsis mortality ranges between 28–50%.

In 1991, American College of Chest Physicians/Society of Critical Care Medicine made a term and definition to describe a more precise sepsis is systemic inflammations response syndrome (SIRS), sepsis, severe sepsis and septic shock. SIRS criteria consisted of: 1). Hyperthermia or hypothermia ($> 38^{\circ}\text{C}$ or $< 36^{\circ}\text{C}$); 2). Tachycardia $> 90/\text{min}$; 3). Tachypnea $> 20/\text{min}$; and 4). Leucocytosis or leucopenia ($> 12,000$ cells/cmm or < 4000 cells/cmm) or the existence of Immature neutrophil $> 10\%$. And this definition is used as criteria for sepsis consensus conference on sepsis and organ failure.¹ The term sepsis is now recognized as a systemic response to an infection of the body.

New approach in handling patients with sepsis may be a more appropriate management of host factors, environmental factors and factors of microorganisms. Handling problems should be a priority of microbes,

particularly those involving resistance to antimicrobial agents, in addition to handling problems that patients who enter hospital with a fever which is also still a problem and needs special attention.⁶

Various efforts have been made to suppress the mortality of sepsis patients, including by publishing a manual handling of patients admitted with fever in 2003.

The purpose of this study was to evaluate the quality of the management of sepsis patients in the Intermediate Care Unit, Department of Internal Medicine Dr. Soetomo, Hospital, Surabaya.

METHODS

Design Research

This study is a retrospective study to re-evaluate the management of patients with sepsis in the Intermediate Care Unit, Department of Internal Medicine, by looking back the medical record of patients with diagnosis sepsis, after the patient are discharged from the hospital.

Materials Research

Patients in the study were patients admitted with diagnosis in sepsis, the time period January 2007 s/d April 2007.

Data Collection

Patient characteristics (gender, age), demographic data, working diagnoses, signs and symptoms, laboratory results (hemoglobin, white blood cell count, platelet count, urine sediment, leukocyte examination and parasites, and radiology tests serological tests). The use of antibiotics recorded by reviewing medical records after patients were discharged from hospital

Information about the use of antibiotics and clinical symptoms and signs of each case were collected from medical records. The quality of antibiotic use was assessed by agreement to flow-chart view of fever management guideline.

Table 1. Patient's age group

Patient's age group	N (%)
10–20	1 (2)
21–30	2 (4)
31–40	5 (10)
41–50	12 (24)
51–60	11 (22)
61–70	16 (32)
71–80	2 (4)
81–90	1 (2)
Total	50 (100)

Measurement results

a) Adherence to the guidelines; b) Percentage of patients who receives antibiotic therapy in accordance with the guidelines; c) Flow-Chart management of fever patients on the first day they were treated in the Intermediate Care Unit were evaluated to identify patients who need or who do not need antibiotics⁵ (picture 1); d) The percentage of antibiotic selection was in accordance with the clinical diagnosis²; e) The percentage of patients who take blood cultures; f) Mortality; g) The percentage of patients who died during sepsis treated in hospital.

RESULTS

Number of patients treated in the intermediate care unit in the study period: 275 patients. The number of sepsis patients: 80 patients. Number of patients included in the study 50 patients, 30 (60%) female and 20 (40%) men. Most age groups 60–70 years of age (32%), Mean 54 Median 56 (table 1). Primary disease in people with Sepsis: Diabetes mellitus 27 (54%); 7 chronic kidney disease (14%) chronic liver disease 11 (22%)

Source of infection: Urinary tract infection (UTI) 10 (20%); cholelitis 2 (4%); peritonitis (SBP)

6 (12%); not clear 32 (64%). Severe complications found: Gastrointestinal bleeding 5 (10%); 4 pulmonary edema (8%); 18 septic shock (36%); Multiple Organ Dysfunction Syndrome 6 (12%). SIRS criteria: patients who did not have SIRS criteria 1 (2%), 1 criteria 4 (8%) patients, 2 criteria 12 (24%) patients, 3 criteria 27 (54%) patients and 4 criteria 6 (12%) patients

Condition of the patients when discharged from the hospital: 27 died (54%) patients, 13 cured (26%), not yet recovered (forcibly discharged) 10 (20%) patients. The reason forcibly discharged: to feel recovered 2 (20%) patients, the condition gets worse patient 3 (30%) patients, there is no cost 2 (20%) patients, the reason is not clear 3 (30%) patients. Antibiotics used: Ceftazidime 18 (36%), Ceftriaxone 19 (38%), Cefotaxime 7 (14%), Ciprofloxacin 4 (8%), Moxifloxacin 1 (2%) patients, did not receive antibiotics 2 (4%)

Microbiology test results: *P. aeruginosa* 1 patient (25%), *Acinetobacter* sp. 1 (25%), *Staphylococcus* sp. 1 (25%), *Klebsiella* spp. 1 (25%) patient. Suitability of patient handling guidelines fever/sepsis: The accuracy of diagnosis: 1 according to the criteria of sepsis patients 45 (90%) patients; 2. Compliance with taking blood samples for microbiological examination 2 (4%) patients; 3. The percentage of appropriate antibiotic selection sepsis guidelines/clinical diagnosis: 49 (98%) patients; 4. Number of patients who should not be given antibiotics (4 patients), but were given antibiotics is 3 (75%) patients; 5. Number of patients who should be given antibiotics (46 patients) but were not given antibiotics 1 (2%) patients.

DISCUSSION

Intermediate Care Unit is a ward that serves to handle patients who require strict monitoring, which have facilities in between intensive care unit and general ward. During the study period was sepsis patients treated in this room reach 80 (29%) of the total 275 patients. This indicates that infectious diseases especially those that have led into the condition of sepsis is still a cause for concern regarding both diagnostic and maintenance procedural problems.

Of the 50 patients included sepsis in this study sample was obtained groups of women suffering more from the group of male patients. While most age groups are dominated by people aged 60–70 years (32%). This can be explained due to age factors that contribute greatly to the patient's immune system.

Related data that underlie diseases such sepsis patients who had diabetes mellitus was found that the highest (27 patients or 54%) followed by chronic kidney disease (7 patients or 14%) and chronic liver disease (11 patients or 22%). This indicates that metabolic diseases are chronic sufferers which affect the immune system so that the group of patients with the disease susceptible to the condition of sepsis. Data on the complications found in sepsis patients include gastrointestinal bleeding (5 patients or 10%), pulmonary

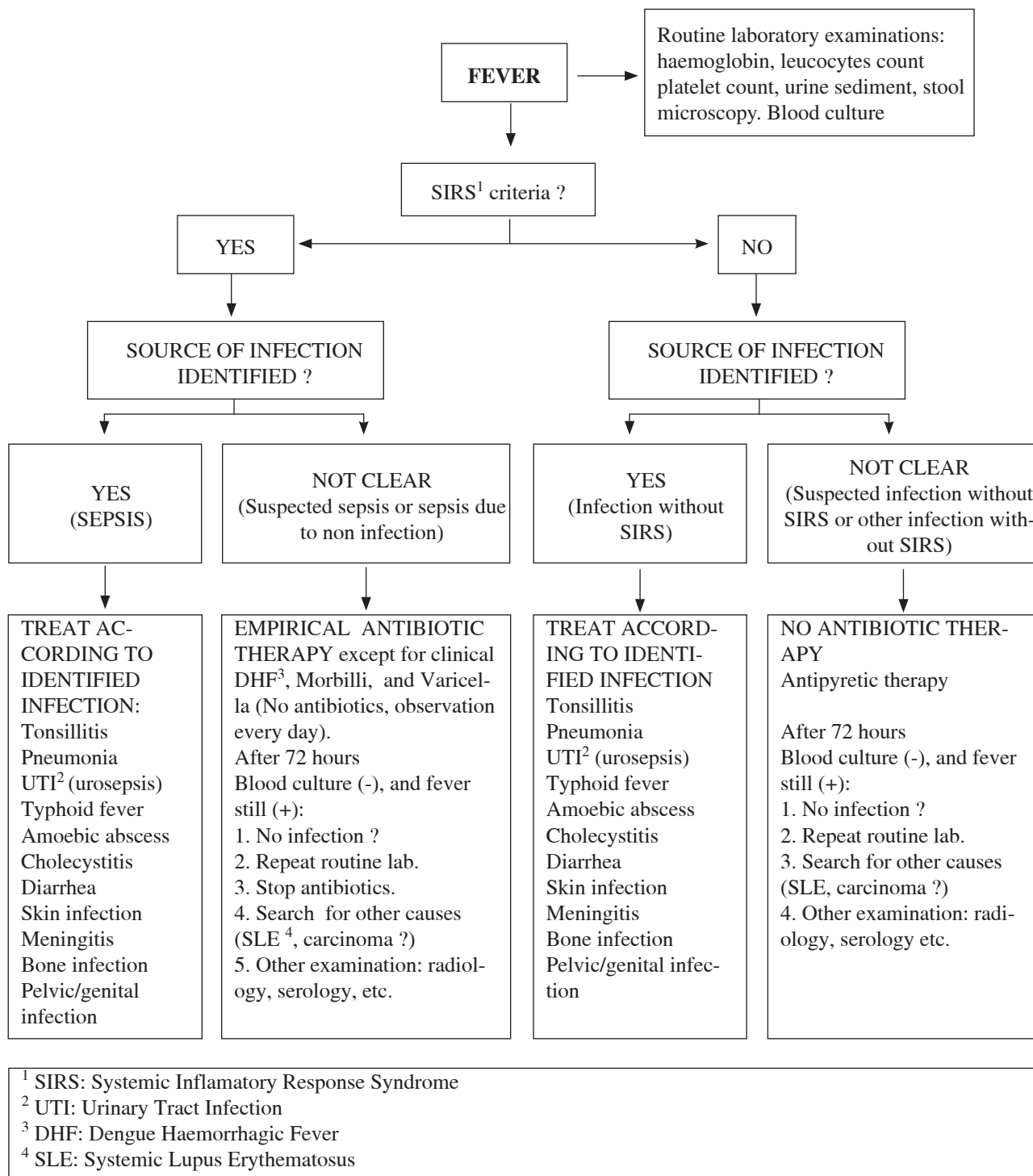


Figure 1. Protocol management new patient with sepsis or fever

oedema (4 patients or 8%), septic shock (18 patients or 36%), MODS (6 patients or 12%). This shows that it is not easy to solve problems of sepsis and its complications posed. It takes a good understanding of the diagnostic aspect, the optimal procedure, teamwork both internally and externally as well as financially sometimes beyond the reach of patients. And the things that we conclude on patient conditions associated with discharged time where

people who died 27 (54%), recovered 13 (26%) and have not recovered (forcibly returned) 10 (20%). The reason home forcibly felt quite varied as cured, the condition gets worse, and there is no cost and no obvious reason. Completeness monitoring of the results from physical examination and laboratory criteria for diagnosis of sepsis supporting were good enough 98–100% (Table 2), this shows that sepsis patients actually

Table 2. Percentage of clinical and laboratory examination of sepsis patients.

Examination	N (%)	Examination	N (%)
Temperature	50 (100)	Blood pressure	50 (100)
Heart rate	50 (100)	Respiratory rate	50 (100)
Haemoglobin	49 (98)	Leukosit	49 (98)
Trombocyte	49 (98)	Blood sugar	48 (96)
Blood Urea Nitrogen	48 (96)	Electrolite serum	36 (72)
Blood Gas analysis	31 (62)	Chest X ray (1 X)	40 (80)
Chest X ray (2X)	13 (26)	Chest X ray (3X)	3 (6)
USG abdomen (1X)	25 (50)	USG (2X)	5 (10)
SGOT/SGPT	48 (96)	Albumin	43 (86)
Globulin	28 (56)	Bilirubin	30 (60)

monitored and carried out intensive treatment. Research sample of 50 patients 45 were filled more than or equal to 2 criteria of SIRS and only 5 that only meet less than 1 or SIRS criteria. The results of this study indicate that there are 5 patients (10%) the criteria for diagnosis of sepsis was not in accordance with the guidelines, it can happen because the clinicians used to make the diagnosis of sepsis if the patient met the condition to appear severe, although judging from the criteria for sepsis is not enough met, in this case it may take special examinations such as procalcitonin as a diagnostic criteria sepsis.³

Important problems encountered in this study is the low adherence of clinicians to perform microbiological tests before giving antibiotik,⁴ where many factors that affect it, such as the lack good preparation for facilities or personnel in making preparations for the examination, in addition to low awareness about the importance of examination microbiology in patients with sepsis.⁴

In the guidelines for the use of antibiotics in sepsis patients is ceftriaxon, compliance ceftriaxon use as empirical therapy is quite good (98%) it can happen because of the availability of sufficient ceftriaxon easy and relatively affordable price, the problem is whether this drug is useful or not, where the treatment here is not guided by the results of microbiological tests and the pattern sensitivity of germs. If you see the number of treated patients mortality is high (> 50%) then the problem of sensitivity of germs to antibiotics used to be an important consideration.

The accuracy of antibiotic treatment indications in patients who should receive antibiotics were good enough, those 46 patients had indications the use of antibiotics, but only 1 patient who was not given antibiotics. Conversely there are patients 3 patients given antibiotics from 4 patients who should not have any indication of the use of antibiotics.

This shows the weakness is still the possibility of health workers to the understanding of the existing guidelines so that the supervision, evaluation and monitoring is expected to continue to be done on an ongoing basis.

CONCLUSION

Patients with infectious diseases who became sepsis remain a significant problem in Dr. Soetomo Hospital, where the mortality rate is still high. Still need to improve compliance with existing guidelines of management patients admitted with sepsis or fever, as well as enhanced ability to support microbiology laboratory in supporting the treatment of sepsis patients.

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