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Survival Pasien Sepsis with Cronic Kidney Disease

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Abstract

Sepsis could induce both acute and chronic kidney injury and increased risk of mortality. The objective of this study was to analyze median survival of sepsis patients with and without chronic kidney disease (CKD). It was a cross sectional study, the study population were all infectious and septic patients who entered in the inpatient installation hospital of Wahidin Sudirohusodo Makassar. Samples were affordable population that meets the study criteria and selected in the order of admission in the hospital (Consecutive Random Sampling), sample size were 21 patients. Data analyze using survival analysis and presented with table consist of median survial, hazard ratio (HR) and confidence interval. Data indicated that median survival of sepsis patient with chronic kidney disease (CKD) was 9 days, while sepsis without CKD patients had a median survival of 34 days Sepsis patient with CKD has risk patients with CKD had an odds of dying 4.764 times greater than patients who did not have CKD; this difference is statistically significant (CI95%, 1.310-17.353). Conclusion of this study is sepsis patient with CKD has higher risk to mortality compare to sepsis patient without CKD.

Keywords: Sepsis; Cronic Kidney Disease; Survival; Mortality.

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1. Introduction

Sepsis is an inflammatory response enhancement due to infection and induced multiple organ dysfunction, risk of mortality is very higher. Inflammatory system is failed to gain homeostasis after its effort to eliminate infection [1, 2]. Problem related sepsis is not a new problem but still exist and need understanding and innovation to decrease morbidity and mortality [3]

Kidney injury both acute and chronic are very common in critical ill patient, some studies have revealed correlation between sepsis and kidney injury[4]. Chronic kidney disease will aggravate sepsis and sepsis is potential induce acute kidney injury [5, 6]. Sepsis patient with kidney injury has increased risk of length of stay (LOS) in hospital and also risk of mortality, understanding of median survival is an important knowledge to give appropriate intervention and conceive its prognosis [7, 8].

Recently, some research try to make a prediction of mortality using some markers such as interleukin-1, interleukin-6, tumor necrosis factor [9, 10]. Author has idea to calculate median of survival in order giving information to clinicians when sepsis patient with and without kidney injury will have a woesening prognosis. Objective of this study was to analyze median survival of sepsis patients with and without chronic kidney disease (CKD).

2. Methods

It was a cross sectional study, the study population were all infectious and septic patients who entered in the inpatient installation hospital of Wahidin Sudirohusodo Makassar. Sample were affordable population that meets the study criteria and selected in the order of admission in the hospital (Consecutive Random Sampling), sample size were 21 patients.

Inclusion criteria were18-80 years old, treated in emergency room, inpatient hospital, fulfilled two of SOFA Score criteria, respiratory rate ≥22/min, patients supporting with infection documentation such as culture, serology eg widal, immunoglobulin, dengue, toxoplasma, HIV, etc, patient not suffering from thyroid disease and haematological malignancy, did not get long-term steroid therapy before study. Exclusion criteria was blood samples lysis or lipemic or incomplete data.

Ethical permission was obtained from the ethics committee of Hasanuddin University medical faculty, study consent was from emergency and inpatient Installation Wahidin Sudirohusodo hospital of Makassar. Each subject gets informed consent before participating in the research.

Data analyze using survival analysis and presented with table consist of median survial, hazard ratio (HR) and confidence interval.

3. Results

Data indicated that median survival of sepsis patient with chronic kidney disease (CKD) was 9 days, meaning

50% of CKD patients have died on day 9 since he was hospitalized while sepsis without CKD patients had a median survival of 34 days or 50% of patients who did not have CKD died on the 34th day of treatment.

Table 1: Median Survival

Group		Median Survival (Days)	Hazard Ratio (HR)	CI 95%
Sepsis with CKD	(n=7)	9	4.764	1.310-17.353
Sepsis without CKD	(n=13)	34		

Sepsis patient with CKD has risk patients with CKD had an odds of dying 4.764 times greater than patients who did not have CKD; this difference is statistically significant (CI95%, 1.310-17.353).

4. Discussion

Sepsis patients with CKD appear to have a very rapid median survival and differ significantly with patients who do not have CKD. This indicates a worsening prognosis in septic patients who also have CKD. These results suggest that examination of the renal condition of the sepsis patient becomes very important and also determines appropriate therapy should be started before the 9th day of treatment, this is very different from patients who do not have CKD. Patients with CKD are on average critical ill patients but knowledge of median survival is helpful to provide warning to clinicians. Sepsis is one of the main causes of both acute and chronic renal impairment, almost 50% of sepsis pastient will develop to renal failure. Study with animal and human subject indicated that adaptive responses from tubular cells to injurious signals is responsible to renal dysfunction [11, 12]. An unifying theory explain the role of interplay between inflammation and oxidative stress in this case and also response of adaptive immune, this response driven by mithocondria [13]. Traditionally, pathogenesis of sepsis induced injury to kidney related with renal ischemia, alteration of renal microcirculation that delivery blood and oxygen to the kidney supposed to be a determinat of renal failure [14, 15]. Sepsis patient will experience of renal blood flow reduction and renal perfussion pressure [16]. Some studies has shown that acute kidney injury or injury in renal will increased risk of poor clinical outcome and mortality to sepsis patient [17, 18]. Reversibility of kideny injury will improve of survival [19]. Survival analysis is helpful to treat patient or choose of apprpriate treatment [20, 21].

5. Conclusion

Sepsis patient with CKD has higher risk to mortality compare to sepsis patient without CKD.

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Competing Interest

The authors declare that they have no competing interests.

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