




Changes in plasma lipid and in-hospital deaths in patients with sepsis

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Abstract

Background: Lipid profiles are infrequently measured in clinical management of sepsis patients. Sepsis leads to significant alterations in the metabolism of lipids. The aim of the present study was to determine whether changes in plasma lipid concentrations during sepsis treatment were associated with clinical outcome.

Methods: In this study, 74 adult septic patients were included in this prospective observational study from January to December 2017. Patients taking lipid lowering agents were excluded. A detailed medical history was obtained and clinical examination was performed. Serum total cholesterol (STC) and its fractions [low-and high-density lipoprotein] and triglyceride levels were measured in the morning of the first day after admission and then once weekly. The primary outcomes of the study were in-hospital mortality, and hospital stay and hypocholesterolemia were defined as STC levels < 50 mg/dL. Mann-Whitney U and chi-squared tests were used for data analysis, and significance level was set at $p < 0.05$.

Results: In this study, 78.4% (CI 95%: 67.3-87.1) of patients had hypocholesterolemia. During the study period, 21.6% (CI 95%: 12.9- 32.7) of patients died. All lipid (except TG) concentrations continuously decreased in deceased sepsis patients but increased in recovering patient (p value for STC ($p=0.004$), LDL ($p=0.006$), HDL ($p=0.010$), and TG ($p=0.052$)). The serum lipids concentration was not associated with length of hospital stay (p value for STC ($p=0.524$), LDL ($p=0.813$), HDL ($p=0.799$) and TG ($p=0.581$)).

Conclusion: In this study it was found that the additional decline of lipid profile was significantly associated with increased mortality rate of sepsis patients. Thus, the clinically termed 'the lipaemia of sepsis' is not true in all situations.

Keywords: Cholesterol, Lipoprotein, LDL, HDL, Triglyceride, Sepsis, Emergency service, Hospital

Conflicts of Interest: None declared

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Introduction

Sepsis is a frequent cause of admission and a frequent fatal condition characterized by a dysregulated inflamma-

tory response to microbial infection and altered metabolic state, leading to tissue injury and organ failure (1). Several

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↑What is “already known” in this topic:

Lipid profiles are infrequently measured in clinical management of sepsis patients. The majority of previous studies focused on the comparative analysis of mean values of serum lipids between survivor and nonsurvivor groups or between sepsis and severe sepsis groups.

→What this article adds:

In this study, serum lipid levels were analysed over time and the association between lipid levels and survival in patients with sepsis was examined. The prevalence of hypocholesterolemia in sepsis patients was significantly higher than in the general population. However, absolute STC, LDL, HDL, and TG levels at the time of admission was not suitable to predict mortality in sepsis patients. The data of this study support the hypothesis that higher decline of serum total cholesterol and other lipid profile during hospital stay are associated with a higher mortality in sepsis patients. Thus, the clinically termed 'the lipaemia of sepsis' is not true in all situations.