Introduction

Septic shock in adults refers to a state of acute circulatory failure characterized by persistent arterial hypotension unexplained by other causes (*Bone, Sprung et al. 1992*). Although this clinical syndrome is heterogeneous with regard to factors such as causal micro-organism, patient predisposition, co-morbidity and response to therapy, a key element and unifying feature is the manifestation of cardiovascular dysfunction.

It is reported that up to 50% of septic patients may have a complication of cardiac dysfunction that contributes to an elevated mortality rate compared with those without cardiovascular impairment *(Annane, Bellissant et al. 2005)*. In this regard, a number of cardiac biomarkers such as cardiac troponins (Troponin I), MB isoenzyme of creatine kinase (CK-MB), and B-type natriuretic peptides (BNP) are now commonly used in the intensive care unit (ICU) *(Verdier, Chauvet et al. 2008)*.

However, although interpretation of these biomarkers may be confounded by several conditions, including severity of the disease, coexisting organ dysfunction, multi-organ involvement, or altered synthesis/clearance *(Maeder, Fehr et al. 2006)*. It is still necessary to find additional novel biomarkers for clinical use.

Heart-type fatty acid–binding protein (H-FABP), an emerging cardiac biomarker, is a small cytosolic protein abundant in cardiomyocyte

that binds long-chain fatty acids and functions in uptake and transport of long-chain fatty acids. It is rapidly released from cardiomyocytes into the circulation shortly after the onset of cell damage *(Valle, Riesgo et al. 2008)*.

Heart-type fatty acid-binding protein has been reported to be a promising biomarker of myocardial damage and clinical outcome in acute coronary syndrome (Valle, Riesgo et al. 2008), and to be useful in the prediction of cardiac dysfunction and adverse outcomes in congestive heart failure, pulmonary embolism, and cardiac surgery with cardiopulmonary bypass (Arimoto, Takeishi et al. 2005; Puls, Dellas et al. 2007; Muehlschlegel, Perry et al. 2010), Heart-type fatty acidbinding protein offers better sensitivity than Troponin I for detecting ongoing myocardial damage in congestive heart failure (Niizeki, *Takeishi et al. 2007*), and better discriminatory ability for pulmonary embolism-related complications than Troponin I and N-terminal proBNP (Puls, Dellas et al. 2007).

Few studies, however, have investigated the utility of H-FABP in critically ill patients; whether H-FABP offers similar and even superior power to conventional cardiac biomarkers in critically ill septic patients is to be elucidated.

In the present study, we aim to investigate, and evaluate the prognostic values of H-FABP for adverse outcomes in septic patients without prior cardiovascular impairment in comparison to Troponin I.



Aim of the work

> In the present study, we aimed to investigate

- The prognostic value of Heart-type fatty acid-binding protein (H-FABP) for adverse outcomes in septic patients without prior cardiovascular impairment in comparison to the cardiac biomarker Troponin I.
- The usefulness of H-FABP as an independent risk factor for mortality in patients with septic shock in comparison to Troponin I.