Biomarkers for Early Prediction of Circulatory Failure in Cardiac Arrest

Halvtidskontroll

Torsdagen den 23 januari 2020

KL 13:00-15:00, konferensrum Närheten vår 3, Carl Bertil Laurellsgata 9, Målpunkt B, SUS Malmö

Joachim Düring

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Abstract

Title: Biomarkers for early prediction of circulatory failure in cardiac arrest

Background: Circulatory failure is a common clinical condition associated with a wide array of disorders in critically ill patients, contributing to a significant burden of morbidity and mortality. Different clinical stressors might trigger a common pathway resulting in hemodynamic failure. Our knowledge of the pathophysiology involved in cardiovascular deterioration is limited. To gain further knowledge, we need to investigate the early phase of shock. The challenge being determining the onset of the initiating trauma in the clinical setting. Post resuscitation circulatory failure after cardiac arrest poses unique possibilities for studying the initiation of shock since onset is well defined. This project aims to attain a greater understanding of the pathophysiology during the early phase of circulatory failure after cardiac arrest.

Research Question/Methods:
Post-hoc analyses of the INTCAR registry and TTM dataset we will be used to answer whether: Early lactate measures predict short time survival after cardiac arrest? Is Copeptin related to circulatory failure and short time survival after cardiac arrest? What factors are associated with circulatory failure after cardiac arrest, and what are those associated with death in patients in circulatory failure? Which biomarkers, as detected by mass spectrometry, are transcribed in higher or lower quantity during circulatory failure?

Preliminary results:
We found that lactate is an independent predictor of 30-day survival after cardiac arrest with an odds ratio 1.08[1.03-1.12] and 1.12[1.02-1.23] per mmol/l increase in lactate at admission and 12 h respectively. The prognostic precision of admission lactate for 30-day survival was weak, 0.65[0.61-0.69]. In our submitted, unpublished paper, Copeptin was independently associated with 30-day incidence of death, with a maximal hazard ratio of 2.81[1.37-5.77] for the fourth quartile of copeptin at 72-hours. Copeptin was not associated with circulatory cause of death, and only weakly correlated with extended cardiovascular SOFA score with maximal rho at 72-hours of 0.25, p<0.001.

Significance:
Lactate and copeptin are independent markers of severity of the post-resuscitation syndrome, only partially related to circulatory failure, and with a weak/moderate predictive accuracy for short time survival.
Publications: