

POSTER PRESENTATION

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Serial arterial lactate levels as a predictor of short- and long-term mortality in patients after cardiac surgery

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From ESICM LIVES 2015

Berlin, Germany. 3-7 October 2015

Introduction

Although hyperlactatemia is common after cardiac surgery (CS), its value and utility as a prognostic marker is controversial.

Objectives

The aim of the present study was to determine whether postoperative serial arterial lactate (AL) measurements after CS can predict outcome.

Methods

Prospective, observational study in our Surgical ICU in a tertiary-level university hospital. AL was measured on ICU admission, 6, 12 and 24h after CS, together with clinical data and outcomes including in-hospital and long-term mortality.

Results

2935 patients were included. In-hospital and long-term mortality (mean follow-up 6.3 ± 1.7 years) were 5.9% and 8.3% respectively. In comparison with survivors, non-survivors showed higher mean AL values in all measurements ($P < 0.001$). Hyperlactatemia ($AL > 3.0$ mmol/L) was a predictor for both in-hospital mortality (OR:1.468; 95% CI:1.239-1.739; $P < 0.001$) and long-term mortality (HR:1.511; 95% CI:1.251-1.825; $P < 0.001$). Recent myocardial infarction and longer cardiopulmonary bypass time were predictors of hyperlactatemia. The pattern of AL dynamics was similar in both groups, but non-survivors presented higher AL values, as confirmed by repeated measures analysis of variance ($P < 0.001$).

The area under the curve also showed higher levels of AL in non-survivors (80.9 ± 68.2 vs. 49.71 ± 25.8 mmol·L⁻¹·h⁻¹; $P = 0.038$). Patients with hyperlactatemia were divided according to their timing of peak arterial lactate, with higher mortality and worse survival in those in whom AL peaked at 24h compared with other groups (79.1% vs. 86.7-89.2%; $P = 0.03$).

Conclusions

The dynamics of the postoperative AL curve in patients undergoing cardiac surgery suggests a similar mechanism of hyperlactatemia in both groups, albeit with a higher production or lower clearance of AL in non-survivors. The presence of a peak of hyperlactatemia at 24h is associated with higher in-hospital and long-term mortality in those patients.

Published: 1 October 2015

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doi:10.1186/2197-425X-3-S1-A104

Cite this article as: Corral-Velez et al: Serial arterial lactate levels as a predictor of short- and long-term mortality in patients after cardiac surgery. *Intensive Care Medicine Experimental* 2015 **3**(Suppl 1):A104.

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