Hyperlactatemia

Hyperlactatemia is defined as a lactate measurement > 2 mmol/L, and is common in critical illness.

Generally, lactate levels > 2 mmol/L represent hyperlactatemia, whereas lactic acidosis is often defined as lactate > 4 mmol/L. Although hyperlactatemia is common finding in liver transplant (LT) candidates, association between lactate and organ failures with Acute-on-chronic Liver Failure (ACLF) is poorly studied. Cheong et al. searched the important variables for pre-LT hyperlactatemia and examined the impact of preoperative hyperlactatemia on early mortality after LT.

A total of 2,002 patients from LT registry between January 2008 and February 2019 were analyzed. Six organ failures (liver, kidney, brain, coagulation, circulation, and lung) were defined by criteria of EASL-CLIF ACLF Consortium. Variable importance of preoperative hyperlactatemia was examined by machine learning using random survival forest (RSF). Kaplan-Meier Survival curve analysis was performed to assess 90-day mortality.

Median lactate level was 1.9 mmol/L (interquartile range: 1.4, 2.4 mmol/L) and 107 (5.3%) patients showed > 4.0 mmol/L. RSF analysis revealed that the four most important variables for hyperlactatemia were MELD score, circulatory failure, hemoglobin, and respiratory failure. The 30-day and 90-day mortality rates were 2.7% and 5.1%, whereas patients with lactate > 4.0 mmol/L showed increased rate of 15.0% and 19.6%, respectively.

About 50% and 5% of LT candidates showed pre-LT hyperlactatemia of > 2.0 mmol/L and > 4.0 mmol/L, respectively. Pre-LT lactate > 4.0 mmol/L was associated with increased early post-LT mortality. Results suggest that future study of correcting modifiable risk factors may play a role in preventing hyperlactatemia and lowering early mortality after LT [1].

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Cheong Y, Lee S, Lee DK, Kim KS, Sang BH, Hwang GS. Preoperative hyperlactatemia and early mortality after liver transplantation: selection of important variables using random forest survival analysis. Anesth Pain Med (Seoul). 2021 Oct;16(4):353-359. doi: 10.17085/apm.21049. Epub 2021 Oct 14. PMID: 35139616.