THE KOREAN SOCIETY OF NEPHROLOGY
APCN & KSN 2024
June 13(Thu) - 16(Sun), 2024 Coex, Seoul, Korea
Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

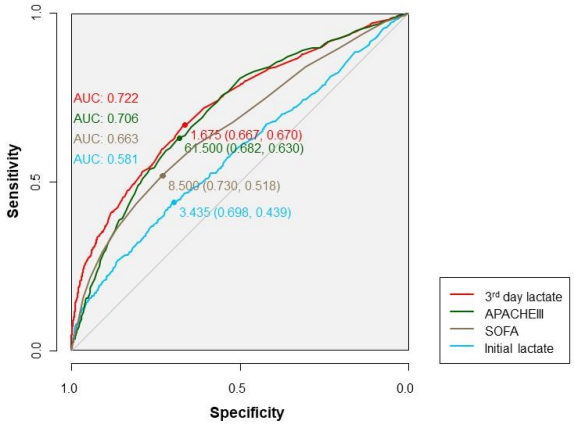
Abstract Submission No.: A-1482

The third-day blood lactate levels and APACHE III are important for predicting mortality in intensive care patients: Analysis from Physionet data

Wonsuk An, Bin Na Park, Seung Eun Kim, Young Ki Son
Department of Internal Medicine-Nephrology, Dong-A University Hospital, Korea, Republic of

Objectives : Intensive care patients have higher mortality and SOFA score is used for mortality prediction. SOFA score was developed more than 25 years ago to monitor organ dysfunction. Nowadays, blood lactate levels indicate septic shock and work as a new vital sign. This study aimed to evaluate the blood lactate levels for mortality prediction and search for the best predictors.
Methods : Physionet data (MIMIC3) was used for this retrospective analysis. A total of 13,357 intensive care patients who were admitted to the intensive care unit over 24 hours and aged over 20 years were enrolled and were initially checked for blood lactate levels. We also analyzed 2,748 patients who were checked for blood lactate levels at baseline, the second day, and the third day. We classified patients into three groups according to initial blood lactate levels (group 0: < 4mmol/L, group 1: 4-7.99 mmol/L, group 2: >8).
Results : The total mortality rate (55.8% vs. 13.1%), 7-day mortality rate, and 30-day mortality rate were highest in group 2 compared to group 0. Charlson-comorbidity index, SOFA score, and APACHE III score were highest in group 2 compared to group 0. Systolic blood pressure, arterial pH, pCO2, and GFR were lowest in group 2 compared to group 0. Those tendencies were similarly found in 2,748 intensive care patients. The third-day blood lactate levels and APACHE III score showed a higher area under the ROC curves predicting total mortality, 7-day mortality, and 30-day mortality than initial blood lactate levels and SOFA score. The third-day blood lactate levels, third-day/initial blood lactate ratio, and APACHE III score were independently associated with total mortality, seven-day and 30-day mortality, but GFR, ventilator care, initial blood lactate levels, and SOFA score were not
Conclusions : The third-day blood lactate levels and APACHE III score were the best predictors of mortality in intensive care patients.

NI_lactate figure table 230917.jpg


Sensitivity
1.0
0.5
0.0
Specificity
1.0
0.5
0.0
AUC: 0.722
AUC: 0.706
AUC: 0.663
AUC: 0.581
1.675 (0.667, 0.670)
61.500 (0.682, 0.630)
8.500 (0.730, 0.518)
3.435 (0.698, 0.439)
3rd day lactate
APACHEIII
SOFA
Initial lactate