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**Lactate as a Predictor of Morbidity and Mortality After Cardiac Surgery.**

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*Background*: The objective of this study was to determine a connection between the values of lactate and the outcome of adult patients after cardiac surgery.
*Patients and Methods*: We analyzed prospectively collected data of 533 patients that underwent cardiac suregry. Patient's lactate level was checked first at the admission to cardiac intensive care unit (CICU) and then every hour or less, depending on the patient's condition. We divided patients into three groups according to their peak lactate value: Group1 (G1) - peak lactate above 4.44 mmol/L, Group 2 (G2) - peak lactate below 4.44 mmol/L and Group 3 (G3) - normal lactate values in first 24 postoperative hours during their hospitalization in the CICU. Both preoperative and postoperative parameters were compared. Sex, Mortality, Postoperative and Preoperative renal failure were analyzed by Chi Square test ($p<0.005$). Bypass time, Operation time, Cross clamp time, Bleeding during operation and first 24 hours, ICU length of stay, Postoperative hospital stay and Total hospital stay were analyzed by ANOVA and Post-Hoc Scheffe tests ($p<0.005$).
*Results*: We found that 387 (72.6%) of patients had an elevated lactate levels during first 24 hours after admission to CICU. First abnormal lactate was measured after 1.99 ±2.27h, peak lactate values were measured after 3.43±2.73h and vast majority of patients returned to normal values in the following 6.21±5.57h after reaching peak value.
Statistically significant results are shown in the table.

| | Group 1, G1 (n=141) | Group 2, G2 (n=246) | Group 3, G3 (n=146) | P value |
|---|---|---|---|---|
| Sex (male/female) | 84/57 (59.6%/40.4%) | 170/76 (69.1%/30.9%) | 111/35 (76%/24%) | 0.011 , G1>G2, G3 |
| Bypass time, min | 109 (±52) | 90 (±38) | 86 (±38) | 0.001, G1>G2,G3 |
| Operation time, min | 282 (±84) | 263 (±62) | 252 (±61) | 0.001, G1>G2,G3 |
| Cross-clamp time, min | 74 (±34) | 65 (±29) | 62 (±29) | 0.02, G1>G2,G3 |
| Bleeding during operation and first 24 h, ml | 535 (±415) | 444 (±320) | 460 (±347) | 0.008, G1>G2,G3 |
| Preoperative renal failure | 38 (27%) | 44 (17.9%) | 23 (15.8%) | 0.036 , G1>G2,G3 |
| Postoperative renal failure | 30 (21.3%) | 26 (10.6%) | 22 (15.1%) | 0.016, G1>G2,G3 |
| ICU length of stay, h | 89 (±143) | 46 (±41) | 42 (±42) | 0.001 , G1>G2,G3 |
| Postoperative hospital stay, d | 9 (±8) | 7 (±4) | 6 (±3) | 0.001 , G1>G2,G3 |
| Total hospital stay, d | 12 (±9) | 9 (±5) | 9 (±5) | 0.001, G1>G2,G3 |
| Hospital mortality | 11 (7.8%) | 1 (0.4%) | 1 (0.7%) | 0.001 , G1>G2,G3 |

Results are presented as average ±SD or percentage

Conclusions: Patients with peak postoperative lactate values above 4.44 mmol/L showed higher morbidity and mortality rate than patients with peak postoperative lactate values below 4.44 mmol/L and those with postoperative lactate values within the normal range.