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High-lactate in point-of-care test (POCT) in children with respiratory diseases at the emergency room – preliminary study

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Clinical and laboratory parameters are sought to help pediatricians assess severity of respiratory illness at the emergency room (ER). Hypoxia and sympathetic activity, triggered by dyspnea and drugs, may lead to lactate elevation during respiratory diseases in children. Lactate is regarded as a good parameter in treatment control and outcome prediction of acute illnesses (eg. sepsis) in adults.

The aim of the study was to analyze lactate concentration, determined by point-of-care test (POCT) at the ER, especially in children with respiratory diseases as preliminary diagnosis. Possible correlations between lactate and other laboratory as well as clinical parameters were considered.

According to a protocol approved by bioethics committee, lactate was measured within 60 seconds in point-of-care test (Accutrend Plus, Roche) in 99 children with a mean age of 4 years and 10 months, who were treated in ER due to various reasons. 24% of the patients were diagnosed with respiratory diseases: asthma exacerbations, viral wheezing, pneumonia and upper respiratory tract infections.

High lactate (>2,2 mmo/l) was found in 30% of patients with respiratory diseases at the ER. Mean lactate concentrations were comparable between children with respiratory and non-respiratory conditions. Lactate was neither correlated with clinical nor laboratory parameter in children with respiratory tract diseases. It did not predict further clinical outcome, measured as the length of the hospital stay (LOS), either. Nethertheless, LOS was negatively closely correlated in that group by pH and base excess (BE). Furthermore significantly higher values of CRP concentration, WBC count, pH as well as temperature and heart rate were obtained in children with respiratory diseases, while the opposite was found with regard to hemoglobin content in comparison to patients diagnosed with other pediatric conditions.

Several clinical (temperature, HR) and laboratory parameters (CRP, WBC, Hb, pH) differentiated children with respiratory from non-respiratory diseases at the ER in our study. Lactate concentration, on the other hand, had no added clinical value in that small group of patients. Further research is conducted to get more POCT measurements of lactate in children with respiratory diseases for complementary analysis.

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