BLOOD GAS ANALYSIS IN CHILDREN HOSPITALIZED DUE TO BRONCHIOLITIS

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Background: Capillary blood gas analysis (CBG) may be useful in lower respiratory tract infections (RTI), but it is not routinely recommended in bronchiolitis treatment. The study focused on retrospective analysis of CBG's predictive value in bronchiolitis and RSV infections.

Material and methods: 698 children were hospitalized due to RSV infections or bronchiolitis in 2010-2018, and CBG was performed in 629 patients (aged 8 days-22 months, median 2.55 months). The final diagnoses were: RSV bronchiolitis- 63.9% (402/629), non-RSV bronchiolitis- 13.4% (84/629), RSV pneumonia- 12.9% (81/629), RSV bronchitis- 9.7% (61/629), upper RTI- 0.1% (1/629). We analyzed correlation between CBG parameters [pH, partial CO_2 pressure (pCO_2), oxygen saturation ($SatO_2$)] and severity (assessed by laboratory and clinical parameters), as well as outcome (length of stay, ICU transfer, antibiotic treatment).

Results: In multiple logistic regression model patients with acidosis were at 4.04 (95%CI: 1.02-16, **p=0.046**) fold higher risk of ICU transfer. In ROC analysis pCO_2 cut-off value of 41.8 mmHg showed **AUC 0.768** (95%CI: 0.646-0.891) with 62.5% sensitivity and 82.4% specificity for the ICU transfer. The correlations between CBG and severity markers (both, laboratory and clinical) was poor and clinically irrelevant. Interestingly, also there was only a weak correlation between oxygen blood saturation and CBG $SatO_2$ (Spearmann's rang correlation r=0.165).

Conclusions: Capillary blood gas analysis does not add crucial data and seems to be justified only in patient who need or are at risk of ICU transfer.

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