SOLUBLE RECEPTOR FOR UROKINASE PLASMINOGEN ACTIVATOR (SUPAR) IN COMMUNITY-ACQUIRED PNEUMONIA IN CHILDREN

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Background: Community-acquired pneumonia (CAP) is the leading single cause of mortality in children under five years of age. In search of new diagnostic markers, soluble urokinase plasmiongen activator receptor (suPAR) level seems to be one of the most promising ones. It has been showed to be useful as a prognostic marker in adult patients with infections (bacterial and viral) such as sepsis or streptococcal pneumonia. It's been reported that infection-associated higher suPAR levels are caused by activation of the immunological system. suPAR is proved (in mice) to play a role in local immune response in lungs. In this study, we focused on the relation between suPAR and severity of CAP.

Material and methods: Between February 2011 and March 2012 (13 months), 243 children with CAP were hospitalized in the Department of Pediatrics, Bielanski Hospital. 37 children met exclusion criteria or did not meet inclusion criteria, due to accompanying disease, previous hospitalization, delayed diagnosis of pneumonia (over 48 hours after admission). Furthermore, only children with radiologically confirmed pneumonia were eligible for the study. The chest radiographs were taken in 180 of 206 (87.4%) children who met the inclusion criteria and pneumonia was confirmed in 169 cases (93.9%).

Serum from every admitted patient was collected on admission and frozen in order to perform ELISA test (suPARnostic, *Virogates*). Finally, suPAR levels were measured in 74 (39 males, 35 females) of 169 (43.8%) patients. The age range of the group included in this study was 1 month to 14 years and 8 months (mean age 3 years and 9 months). Patients were chosen at random with no preference, although they were not randomized. Inflammatory markers, such as white blood cells count (WBC), neutrophil count, serum C-reactive protein (CRP) and procalcitonin (PCT) were used as reference in the analysis. To assess a correlation between suPAR levels and inflammatory markers, Spearmann's rank correlation coefficient was measured. **Results:** Median for suPAR measurements in children with pneumonia was 8.29 ng/mL, ranging from 2.44 ng/mL to 18.3 ng/mL. A weak correlation was found between suPAR and CRP and suPAR and PCT, with statistically important correlation coefficient (**$p<0.05$**). Other correlation coefficients (suPAR-WBC and suPAR-neutrophil count) were of no statistical significance ($p>0.05$). However, the power of correlation with CRP and PCT was 0.25 (both for CRP and PCT), so the correlation is too weak to be found clinically important. **Conclusions:** Although correlation between suPAR and inflammatory markers was weak, it should be noted that suPAR values in the whole group of children with radiologically confirmed CAP were high, much higher than in healthy adults and higher than values found in researches with control group of healthy children. Further analysis of clinical significance and comparison with children without pneumonia are necessary.

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