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Title: Inflammation biomarkers of lung tissue damage in acute exacerbation of COPD patients

Dr. Emilija 4782 Lozo Vukovac emilija.lozo@gmail.com MD , Prof. Kornelija 4783 Mise kornelijamise@yahoo.com MD , Dr. Ivan 4784 Gudelj ivan.gudelj.1956@gmail.com MD and Dr. Irena 4785 Peric i.peric04@gmail.com MD . [1] Department of Pulmonology, University Hospital of Split, Split, Croatia .

Body: Introduction: The inflammatory process in COPD is characterized by infiltration of the airways by neutrophils and inflammatory markers, although laboratory findings are normal or slightly abnormal. Objective: Primary endpoint: to examine relationship between markers of systemic inflammation and local lung inflammation markers in patients with COPD. Secondary endpoints: to determine the pH status of bronchoalveolar aspirate (BA) in patients with COPD. Materials: We studied 84 hospital patients with diagnosed COPD in acute exacerbation who underwent video bronchoscopy. LDH in the BA (L-LDH), C-reactive proteine in the BA (L-CRP), serum LDH (S-LDH) and serum CRP (S-CRP) and lung pH were measured. Results: The values of S-LDH with L-LDH (P=0.001), S-CRP with L-CRP (P=0.037) correlated. Lung pH values correlate with L-LDH values (P<0,001), S-LDH values (P<0,001). We found no statistically significant difference between L-LDH with normal and increased S-LDH values (P=0,400). pH was 6,89±0,684. In bacteria isolated patient group average lung pH value was 0,8 greater than average pH value of non-isolated bacteria patient group (t=6,4;p<0,001). In bacteria isolated patient group, median L-LDH value is 1,9 times greater than median L-LDH value of non-isolated bacteria patient group (Z=5,23;p<0,001). Conclusions: Analysis of L-LDH is a potentially useful tool for evaluating lung tissue damage and can serve as an estimate of bacterial infection in the lungs. Alkaline lung pH environment, caused by long lasting infection, as well as acidic environment destroy the lung tissue.