Pancreatic stone protein predicts positive sputum bacteriology in exacerbations of COPD

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Background: Pancreatic Stone Protein/regenerating protein (PSP/reg) is increased in bacterial inflammatory processes. PSP/reg might therefore be also useful as a predictor of bacterial infection in COPD. Methods: 200 consecutive patients presenting to the emergency department due to acute exacerbation of COPD were prospectively assessed. Patients were evaluated based on clinical, laboratorial and lung-functional parameters at admission (exacerbation) and after short term follow-up (14-21 days). PSP/reg serum values were measured by a new developed enzyme linked immunosorbent assay (ELISA).

Results: PSP/reg levels were elevated in subjects with COPD exacerbation (23.8 ng/ml 95% CI [17.1-32.7]) when compared to those with stable disease (19.1 ng/ml 95% CI [14.1-30.4]) and healthy controls (14.0 ng/ml [12.0-19.0], p<0.01). Higher PSP/reg values were observed in exacerbations with positive (26.1 ng/ml 95% CI [19.2-38.1]) as compared to those with negative sputum bacteriology (20.8 ng/ml [15.6-27.2], p<0.01). Multivariate regression analysis revealed PSP/reg as independent predictor of positive sputum bacteriology. A combination of a PSP/reg cut-off of >33.9 ng/ml and presence of discolored sputum had a specificity of 97% to identify patients with pathogen bacteria on sputum culture. In contrast, PSP/reg levels <18.4 ng/ml and normal sputum color ruled widely out positive bacterial sputum culture (sensitivity 92%). In survival analysis, high PSP/reg levels at hospital admission were associated with increased 2-year mortality.

Conclusions: PSP/reg might represent a promising new biomarker to identify bacterial etiology of COPD exacerbation in future.