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Title: Serum surfactant protein D: Biomarker of chronic obstructive pulmonary disease

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Body: Background: Surfactant protein D (SP-D) is a lung-specific protein proposed to predict clinical outcomes in patients with chronic obstructive pulmonary disease (COPD). However, the changes in serum SP-D during acute exacerbation (AECOPD) episodes and the relationship of serum SP-D with the overall severity of the disease in stable COPD (SCOPD) remain unclear. Methods: Serum SP-D levels were analyzed in three groups, including AECOPD (n = 40), SCOPD (n = 71), and controls (n = 60). In AECOPD group, serum SP-D levels were determined at 1, 5, 14, and 30 days post-exacerbation. In SCOPD group, BODE (body mass index, airflow obstruction, dyspnea, exercise capacity) index was evaluated for severity assessment. Results: Serum SP-D levels were sequentially elevated from the controls to the SCOPD, and then to the AECOPD ($p < 0.001$). During an AECOPD episode, the raised serum SP-D levels subsided at day 5 ($p > 0.05$), fell markedly at day 14 ($p < 0.001$), and continued to decline at day 30 ($p < 0.001$). Among patients with SCOPD, serum SP-D levels correlated positively with the BODE index ($p < 0.01$). Conclusions: The longitudinal changes in serum SP-D levels during an AECOPD episode suggest that SP-D may be a potential systemic biomarker for COPD exacerbation. The correlation of serum SP-D levels with the BODE index suggests that circulating SP-Ds can reflect the overall severity of SCOPD.