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Title: Sputum neutrophil monitoring is useful for long-term oxygen therapy in patients with COPD

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Body: Long-term oxygen therapy (LTOT) is the treatment proven to improve survival in chronic respiratory failure patients, especially chronic obstructive pulmonary disease (COPD). Participation of airway neutrophil inflammation is suggested to be a part of illness, such as COPD. The aim of this study is to evaluate whether sputum neutrophil monitoring is useful for LTOT in patients with COPD exacerbations. Twenty two patients, mean age were 72 years, were participated in this study. Twenty patients survived to the follow-up after 14 months of this study. Before recieving LTOT, mean sputum neutrophil was 8%. However, after LTOT administrations, sputum neutrophil was decreased to approximately 3% and reduced the number of hospitalizations including outpatient service. Also St.George's Respiratory Questionnarie score (SGRQ) was significantly improved. In peripheral blood, downward tendency was seen, but not so significant. Before outpatient service in COPD patients, average neutrophil percentage in the sputum was gradually raised up to 18%(±6). So we could respond for COPD exacerbations at an early stage,using corticosteroid and antibiotic drugs.While this neutrophil participate mechanism is still unknown, further study should be needed including cytokine evaluation. However, this study indicates that in patients with COPD, long-term oxygen therapy is associated with airway sputum neutrophil reduction.