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Title: Computed tomography of the paranasal sinuses in COPD compared to a healthy control-group

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Body: Background: Pathologic correlates of the upper airways have been rarely evaluated in chronic obstructive pulmonary disease (COPD). Aims: Assessment of objective and subjective impairment of the upper airways in COPD compared to a healthy control-group. Methods: Computed tomography (CT) of the paranasal sinuses was performed in a group of patients with COPD and in a healthy matched control-group according to gender and age. CTs were evaluated using the Newman scoring system (>0 points considered abnormal). Rhinosinusitis related quality of life and symptoms were assessed with the Sino Nasal Outcome Test-20 (SNOT-20) (>12 points considered abnormal) and the SNOT-primary nasal symptoms score (SNOT-PNS) (>12 points considered abnormal). Spirometry was performed according to established guidelines. In controls COPD was excluded with spirometry. Results: We included 83 COPD patients (35 women) and 28 controls (18 women) with a mean age of 67 years (range: 44-90) and 68 years (range 49-84) respectively. Significantly more abnormal CT scores (49 subjects (59%)) were observed in the COPD group in comparison to the control-group (9 subjects (32%)) ($p<0.05$). 51 (61%) and 57 (68%) subjects with COPD scored abnormal SNOT-20 and SNOT-PNS respectively. In the control-group in 13 subjects (46%) an abnormal SNOT-20 and in 9 subjects (32%) an abnormal SNOT-PNS was measured. This accounted to a significant difference between the COPD and the control-group for both SNOT-20 and SNOT-PNS of $p<0.05$. Conclusion: Pathologic correlates of the upper airways were found in more than half of the patients with COPD. This was significantly higher compared to a healthy control-group.