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Title: Telomerase expression in idiopathic pulmonary fibrosis (IPF) and non small cell lung cancer (NSCLC)

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Body: Rationale:Telomeres protect chromosome ends since chromosomes lacking telomeres undergo fusion, rearrangement and translocation. Telomerase dysfunction has been linked with pathologic autoimmune responses and could play a role in both fibrogenesis and carcinogenesis. We aim to evaluate telomerase expression (mRNA levels of both subunits TERT and TERC) in Bronchoalveolar Lavage Fluid (BALF) and lung tissue of patients with NSCLC and IPF, since there are indications of common pathogenetic pathways in both diseases. Patients and Methods: We prospectively studied 44 BALF samples from NSCLC patients, 29 BALF samples from IPF patients and 13 BALF samples from control subjects. We also studied lung tissue samples from 32 IPF patients, 10 NSCLC patients and 21 control subjects. mRNA expression for both hTERT and hTERC was measured by Real-Time RT-PCR. Results: (a) Lung tissue: IPF mRNA hTERT levels (0.24±0.14) were significantly lower compared to controls (0.46±0.30) (p=0.030). hTERC mRNA levels were higher in the control group (4.3±1.9) compared to NSCLC (2.87±1.51) and IPF (1.21±0.97), with strong grouped statistical significance (p=0.0001). (b) BALF: hTERT expression was higher in the control group (0.78±0.06) compared to IPF (0.39±0.14) and NSCLC (0.34±0.29) (p=0.005). hTERC expression was higher in the IPF group (1.09±0.39) compared to controls (0.54±0.40) and NSCLC (0.62±0.19), with no grouped statistical significance. Conclusion: The attenuated expression of both telomerase subunits measured in NSCLC and IPF patients when compared to controls, suggests that telomerase genes may play a significant role in fibrogenesis and carcinogenesis, supporting the hypothesis of a common pathway.