Title: Protective effects of tiotropium bromide in the progression of airway smooth muscle remodeling

Body: OBJECTIVE: We investigated the effects of treatment with the long-acting muscarinic receptor antagonist tiotropium on airway smooth muscle changes in patient with COPD II stages. RESULTS: To observe the effect on airway inflammation, we analyzed total and differential cell counts in bronchoalveolar lavage fluid and there is little difference between COPD group and tiotropium-treated group, regardless of the concentration of tiotropium. In the preliminary study of COPD, we also observed that tiotropium administration does not decrease the counts of airway inflammatory cells compared with COPD group. However, the tiotropium-treated group inhibited airway hyperresponsiveness to methacholine in comparison with control group and showed the hyperplasia of goblet cells more decreased than in COPD group. The area of α-smooth muscle actin, as an indicator of remodeling in airway smooth muscle by immunohistochemical staining significantly decreased in tiotropium-treated group. CONCLUSIONS: These results indicate a prominent role for acetylcholine in airway smooth muscle remodeling, a process that was thus far considered to be primarily caused by growth factors and other mediators of inflammation. Therefore, muscarinic receptor antagonists like the long-acting anticholinergic tiotropium bromide could be beneficial in preventing chronic airway hyperresponsiveness and decline in lung function in COPD.