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Effect of TGFβ1 and TIMP2 on Disease Activity in Asthma and COPD

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ABSTRACT

The process of bronchial tissue repair/remodeling depends on balance between production and degradation achieves the regulation of extracellular matrix turnover. We designed this study to evaluate relation between Transforming Growth Factor β1 (TGFβ1) and Tissue Inhibitory of Metaloproteinase 2 (TIMP2) as two main tissue mediators on activity and reversibility of asthma and chronic obstructive pulmonary disease (COPD).

In a cross sectional study we evaluated TIMP2 and TGFβ1 expression in two groups of 29 asthmatic (14 males and 15 females) and 13 male COPD patients using semi-quantitative PCR on induced sputum samples. The relation between TIMP2 and TGFβ1 and PFT indices and disease free period were assessed. The COPD patients with raised expression of both TGFβ1 and TIMP2 had better pulmonary function test (PFT) indices and also longer disease free period. In contrast patients with chronic asthma could remain in well pulmonary function status with raised TIMP2 and decreased TGFβ1 expression.

We supposed that underlying inflammatory process is the main reason for the different effect of cytokines in asthma and COPD. It raises concern about critical role of corticosteroids consumption on various cytokines expression. Furthermore TGFβ1 may be served as a biomarker in sputum for assessing disease activity and evidence based prescribing corticosteroids in patients with COPD and asthma.

Key words: Asthma; COPD; TGFβ1; TIMP2

INTRODUCTION

Airway remodeling is an irreversible and dynamic process which can lead to more rapid decline in lung function over time.

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The process of bronchial tissue repair/remodeling depends on balance between production and degradation achieves the regulation of extracellular matrix (ECM) turnover. The ECM degradation is dependent on the family of proteinases termed matrix metalloproteinases (MMPs)[1-3] Airway epithelium and inflammatory cells like macrophages are important sources of transforming growth factors beta-1 (TGFβ1) in addition to other growth factors that have potent effects on airway reconstruction. The role of TGFβ1 in pathologies of