

# European Respiratory Society Annual Congress 2013

**Abstract Number:** 2731

**Publication Number:** 5027

**Abstract Group:** 5.3. Allergy and Immunology

**Keyword 1:** Asthma - mechanism **Keyword 2:** Lung function testing **Keyword 3:** No keyword

**Title:** Elastic fibers and fibronectin expression in severe asthmatics

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**Body:** Introduction: Deposition of extracellular matrix occurs in the airways of severe asthmatics but how this impacts on airway function is unclear. We aimed to investigate elastic fibers and fibronectin content in the airways of severe asthmatics and their association with airway function. Methods: Sixty-two severe asthmatics received a 2-week oral corticosteroid (OC) trial (40 mg/day prednisone) plus 800 µg budesonide + 24 µg formoterol as daily maintenance therapy and 200 µg budesonide + 6 µg formoterol as rescue medication for 12 weeks. All patients were non- or ex-smokers ≤ 10 pack-years. Patients were classified based on post-bronchodilator (BD) lung function after the 2-week OC trial into 3 groups: non-persistent obstruction (NPO: FEV1 ≥ 80%pred + FEV1/FVC > 0.70), persistent obstruction (PO: FEV1 > 50% and < 80%pred + FEV1/FVC ≤ 0.70) or fixed obstruction (FO: FEV1 ≤ 50%pred + FEV1/FVC ≤ 0.70). Endobronchial biopsies were performed at the end of 12 weeks. Elastic fibers and fibronectin were quantified by histochemistry and immunohistochemistry, respectively, and by digital image analysis in the bronchi inner layer (IL) and within the airway smooth muscle bundles (ASM). This study was approved by the University of São Paulo Clinics Hospital Ethics Committee. Results: Fourteen patients were classified as NPO, 36 as PO and 12 as FO. Elastic fibers and fibronectin airway content were not different among the groups. Elastic fibers in the ASM correlated with post-BD FEV1 %change in the NPO group (r = - 0.764, p = 0.006) and PO group (r = - 0.382, p = 0.049) but not in asthmatics with FO. Conclusion: Elastic fibers content within the ASM may impact on airway function of severe asthmatics without fixed airway obstruction.