European Respiratory Society
Annual Congress 2013

Abstract Number: 4549

Publication Number: P585

Abstract Group: 3.2. Airway Cell Biology and Immunopathology

Keyword 1: Asthma - mechanism **Keyword 2:** Immunology **Keyword 3:** Inflammation

Title: Possible mechanisms of worsening bronchial asthma coexisting with thyroid gland pathology

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Body: We tested serum IgE levels, IL4/IL1 and IL4/INFγ ratio in 17 patients with BA, 14 with hypothyroidism (hypoT), 15 with hyperthyroidism (hyperT), 14 with BA+hypoT and 14 with BA+hyperT. Spirometry was performed. BA remission duration and BA attack frequency per year were assessed. Data are shown as mean±SEM, difference assayed as t-test p<0,05. Results: Thyropathology increases BA attack's frequency (4.5±0.5 in BA vs 6.25±0.65 in BA+hypoT group, p=0.04; and 5.08±0.4 in BA+hyperT, p=0.06) and decreases the remission duration (12.08±0.88 weeks/year in BA group vs 8.63±0.88 in BA+hypoT, p=0.02, and 9.33±0.76 in BA+hyperT, p=0.03). Patients with BA+hyperT had serum IgE levels grater than patients with BA and with BA+hypoT (266.7±17.3 IU/L vs 159.4±3.8 IU/L, p=0.01, and 122.5±9,8 IU/L, p=0.001, respectively). Serum IL4/IL1 ratio in BA+hyperT group was increased (36.16±1.21 BA+hyperT vs 27.02±0.79 BA, p=0.001), while in BA+hypoT lessened (12.76±0.93 BA+hypoT, p<0.0001 vs BA). Ratio IL4/INFγ was decreased in BA+hypoT group (1.1±0.1 BA+hypoT vs 2.21±0.37 BA, p=0.01); between BA+hyperT and BA groups there was no difference. FEV1 showed no difference between groups. Patients with BA+hypoT had FEF50 and FEF75 reduction versus BA (48.91±3.02% vs 58.45±2.53%, p=0.04, and 35.24±1.78% vs 47.23±1.78% p=0.03, respectively). Conclusions: Hypothyroidism increases BA attacks, reduces BA remission, FEF50 and FEF75 values and Th2-activity. The possible pathway of BA worsening may concerns not with immunology but myxedema due to lack of thyroid hormones. Hyperthyroidism reduces BA remission, increases serum IgE and IL4/IL1 ratio. The possible BA worsening mechanism may be Th2-response excessive stimulation.