Objective: To evaluate IFN-γ and IL-4 cytokines ratio and CD25+ lymphocytes blood content in patients with asthma and to predict asthma exacerbation.
Methods: We included 48 patients with asthma exacerbation and 48 with asthma remission and 30 matched control subjects. All underwent detailed clinical examination and spirometry. IFN-γ and IL-4 cytokines concentration in blood was measured by enzyme immunoassay. Investigation of CD25+ lymphocytes in blood was carried out by flow cytometry.
Results: Patients with asthma exacerbation had significantly lower values of IFN-γ and IL-4 ratio than patients with asthma remission (0,026 (0,016-0,046) vs 0,092 (0,066-0,157); p<0,001) and controls (1,44 (1,17-1,69); p<0,001), they also had significantly higher values of CD25+ cells than patients with asthma remission (10,22 (4,92-13,09)% vs 5,85 (4,14-7,83)%; p<0,001) and controls (5,49 (3,69-6,01)%; p<0,001). The regression equation for asthma exacerbation prediction is: Z=exp(1,40005+0,107702X-54,223Y)/(1+exp(1,40005+0,107702X-54,223Y)), where X – IFN-γ and IL-4 ratio; Y – % of CD25+ lymphocytes. If Z≤0,5, the patient has remission; if Z>0,5, the patient has exacerbation; the above Z, the above asthma exacerbation probability. The value of correct predictions is 89%.
Conclusion: Decrease of IFN-γ and IL-4 cytokines ratio and increase of CD25+ lymphocytes blood content can be predictor for asthma exacerbation and allows predicting asthma exacerbation with the probability of 89%.

P3150
Clinical characteristics, airway inflammation, and adipocytokines in overweight and obese asthmatics
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Rationale: Obesity affects asthma development, severity, and treatment response. Understanding how obesity influences symptoms, QOL and asthma characteristics is thus necessary to optimize management for this phonotype.
Methods: 186 adult patients with mild-to-moderate persistent asthma were enrolled in this study, from which 25 patients whose BMI of > 25 kg/m2 and 25 normal weight patients were randomly selected. Patients completed ACT and underwent comprehensive pulmonary function testing. Blood samples were collected to measure adipocytokines including IL-6, leptin, adiponectin, PAI-1 and TNF-α. Inflammatory cell counts in induced sputum and NO contents in exhaled air were measured. We also assessed the response to 12-week treatment with FBC.
Results: Overweight patients were more likely to be women ($p = 0.026$), and had older age of disease onset ($p = 0.022$), lower ACT scores ($p = 0.045$) and lower serum IgE ($p = 0.042$). FRC and ERV were less in overweight patients than in normal weight patients (both $p < 0.05$), but there were no differences in FVC, FEV1, TLC and RV between two groups. In overweight patients, IL-6, leptin and PAI-1 levels were lower (each $p < 0.04$), and there were significant positive correlation between plasma leptin concentration and sputum eosinophil number and ECP contents. After the treatment, among asthma-related measures, the responses of FEV1 and ACT scores were poorer in overweight patients (both $p < 0.05$).
Conclusion: Overweight is an important phonotypic determinant in asthma. The increased levels of leptin might play a role in eosinophilic airway inflammation, and the responses to inhaled corticosteroid are attenuated in overweight patients.

P3151
Inhibition of matrix metalloproteinase-2 activity by propranolol in immunocompetent cells
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Introduction: Matrix metalloproteinases (MMPs) are a large group of proteases degredate the extracellular matrix proteins and have a major role in inflammation. Matrix metalloproteinase-2 (MMP-2) belongs to MMPs family plays an important role in some inflammatory mediated respiratory disorders such as chronic obstructive pulmonary disease (COPD) and asthma. Propranolol (a non selective beta-adrenergic blocker) has been widely used for treatment of several cardiovascular complications such as arterial hypertension and arrhythmias. Anti-inflammatory effects of propranolol have also been reported.
Objectives: In this study the effect of propranolol on MMP-2 activity in human peripheral blood mononuclear cells (PBMCs) has been investigated in vitro.
Methods: Human PBMCs were cultured in complete RPMI medium. The cells at logarhytmic growth phase were stimulated with phytoheamagglutinin (PHA) (at optimal concentration) and then incubated with different concentrations of propranolol (4×10^{-7} - 4×10^{-4} M) for 48 hours. The gelatinolytic activity of MMP-2 in cell culture supernatants was tested by zymography.
Results: Propranolol significantly decreased the MMP-2 activity in PHA-stimulated human PBMCs dose-dependently compared to untreated control cells.
Conclusion: According to the results of the present study propranolol down-regulates the MMP-2 activity in human PBMCs. Thus the anti-inflammatory effects of propranolol may be in part due to its inhibitory effects on MMP-2 activity. Therefore propranolol along with its long-term usage in cardiac problems might be a useful tool in planning of therapeutic approaches for inflammatory-based disorders such as COPD and asthma.

P3152
Comprehensive characterisation of T helper cells, cytotoxic T cells and novel invariant T cell phenotypes in human asthma
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Introduction
The relative roles of various T cell subsets in airways inflammation have not been fully elucidated. Mucosal associated invariant T (MAIT) cells are novel innate-like T-cells which express CD161 and an invariant TCRα chain (Vα7.2-Jα33) and recognise the highly conserved restriction molecule MR1.
Aims
To assess the relative roles of Th17, Th1, Th2, Treg, γδT cells, CD8+ Tc1 and Tc2 cells in asthma, and to investigate the potential relevance of MAIT cells.
Methods
84 subjects underwent detailed clinical phenotyping. PBMC, sputum, lung lavage and biopsies were phenotyped by flow-cytometry, RT-qPCR, and ELISA.
Results
Th17 cell frequencies did not differ between health and any asthma. Th2 cell frequencies were elevated in asthma in BAL and biopsies. BAL Treg frequencies were lower in severe asthma.
Tissue Tc2 were increased in eosinophilic disease, nasal polyposis and smokers. Th2 cytokines were increased in asthma in sputum and BAL. IL-17 was elevated only in BAL in steroid-naïve, older, mild asthmatics.
Frequencies of Vα7.2+CD161+ (MAIT) cells in blood were lower in asthma than health and correlated with severity in blood and sputum. This deficiency was specific to MAIT cells, was not related to age, but was exacerbated by 7 days oral steroids. MAIT frequencies correlated with serum vitamin D. MAIT cells were cloned and were heterogeneous in expression of TNFα, IL-17, IFNγ and IL-13.
Conclusions
A role for Th17 cells in asthma is not supported by these data. High BAL IL-17 levels in mild asthma may have a different cellular source. We describe a novel finding of deficient MAIT cells in severe asthma, whose role in disease remains to be elucidated.

P3153
New way forward in polyp research; changes in TLR9-expression of apparently healthy nasal mucosa behind polyp growth
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Background: The origin of nasal polyps in chronic rhinosinusitis is unknown, but it is a well-known clinical fact that viral infections tend to stimulate their growth. Toll like receptors (TLRs) have recently emerged as key players in our local airway microbial defense. Among these, TLR9 has gained a special interest in viral disease. Nearly all studies of chronic rhinosinusitis with polyps (CRSwNP) have been focus on comparing polyp tissue with nasal mucosa from polyp free individuals. The information about changes in the apparently healthy mucosa bordering the polyp is limited.
Objective: To find new ways forward in CRSwNP research by focusing on the role of TLR9 in polyp adjacent nasal mucosa.
Methods: Biopsies from polyp and adjacent mucosa from CRSwNP-patients (n=11) and healthy controls (n=11) were collected and stimulated in vitro with CpG. Receptor expression and cytokine release were analyzed using flow cytometry and Luminex. Another 8 patients were intranasally challenged with either CpG -OND, a TLR9 agonist or placebo 24 hours before surgery.
Results: A reduced expression of TLR9 was found in epithelial cells from adjacent mucosal in CRSwNP-patients compared to healthy control. CpG stimulation