SUNDAY

307 Interleukin-4 and Transforming Growth Factor-Beta Single Nucleotide Genes Polymorphisms Confer Susceptibility To Atopic Dermatitis

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RATIONALE: Atopic dermatitis (AD) is a chronic inflammation of the skin, seems to have a strong genetic background. Interleukin-4 (IL-4) is one of the cytokines implicated in promotion of allergic diseases and transforming growth factor-beta (TGF-β) is an anti-inflammatory cytokine promoting counter-regulatory responses to IL-4. This study aimed to investigate association of polymorphisms at genes encoding IL-4 or TGF-β with susceptibility to AD.

METHODS: This case-control study comprised 89 children with established diagnosis of AD and 139 healthy controls. Single nucleotide polymorphisms at *IL-4* -1098T>G (rs243248), -590C>T (rs2243250), -33C>T (rs2070874), and *TGF*-β codon10C>T (rs1982073) and codon25G>C (rs1800471) were typed. Frequencies of alleles, genotypes and haplotypes were estimated and compared between patients and controls.

RESULTS: Patients with AD had significantly higher percentage of T allele at *IL-4*-1098T>G (84.4%) and C allele at *IL-4*-590C>T(85.0%) and *IL-4* -33C>T (84.4%, all p<0.001). TT genotype at *IL-4*-1098T>G [OR 3.65, 95%CI (1.99-6.71)] and CC genotype at both *IL-4*-590C>T [OR 31.75, 95%CI (13.61-76.07)] and *IL-4*-33C>T [OR 3.52, 95%CI (1.92-6.52)] were overrepresented in AD patients (p<0.001). Consistently, TCC haplotype was significantly more frequent in AD patients [(OR 5.15, 95%CI (3.28-8.08), p<0.001]. Considering *TGF*-β gene in AD patients, C allele was significantly higher at both loci and CC at codon10C>T [OR 15.34, 95%CI (7.55-31.55)] and CG at codon25G>C (100%) were overrepresented (p<0.001). CC haplotype of *TGF*-β was overrepresented in patients [(OR 6.86, 95%CI (3.88-12.21), p<0.001)].

CONCLUSIONS: Considering higher frequencies of specific genotypes of both *IL-4* and *TGF*-β in patients with AD, the gene polymorphisms of these cytokines could confer susceptibility to AD.

308 A Comparison Of Regulatory T-Cell Receptor Vβ (3,5) Expression In Patients With Food Allergy and Atopic Dermatitis

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RATIONALE: Regulatory T (Treg) cells play an important role in the maintenance of self-tolerance, and patients who lack these cells have an increased incidence of atopic dermatitis (AD) and food allergies (FA). Staphylococcus aureus superantigenic toxins have been shown to be important in AD, but their role in FA and their potential influence on Treg cells is not well understood. To explore the interplay between Staphylococcus superantigens and Treg cells in atopy, we characterized Treg cell phenotypes and T-cell receptor (TCR) Vβ (3,5) chain superantigen specificity in patients with FA and AD.

METHODS: Peripheral blood mononuclear cells were isolated from 21 patients recruited at the Ann & Robert H. Lurie Children's Hospital of Chicago and analyzed using flow cytometry as part of an ongoing study. Populations of Treg cells, defined as $CD4^+CD25^+CD127^-Foxp3^+$, were isolated and percentages of TCR Vβ (3,5) expression were compared using the Mann-Whitney-Wilcoxon test between the following 4 patient groups: +FA and +AD (4), -FA and +AD (0), +FA and -AD (7), and +FA and +AD (10).

RESULTS: Percentages of TCRs expressing Vβ (3,5) were significantly higher ($p<0.01$) in $Foxp3^+$ T cells of patients with FA who did not have AD compared to patients with FA and AD. There was a trend toward significance for Treg cells of patients without FA and AD to have the highest percentages of Vβ (3,5) expression.

CONCLUSIONS: There appears to be differences in TCR Vβ expression of Treg cells in patients with FA and AD.

309 Correlation Between Fractional Exhaled Nitric Oxide and Asthma Exacerbation

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RATIONALE: Fractional exhaled nitric oxide (FeNO) levels have been used as the marker of airway inflammation. FeNO levels ≥49 ppb has been proposed to predict asthma exacerbation. This study aim to determine the correlation between FeNO levels and asthma exacerbation

METHODS: A prospective study was performed in patients with atopic asthma aged ≥7 years. The participants were assessed every 2 months for 1-2 years. FeNO levels and spirometry were measured every 6 months.

RESULTS: At 6-month-follow up, 56 patients (38 boys) with median age of 12.1 years (7.03-28.0 years) were evaluated. Most of them (66%) were treated with inhaled corticosteroids. Sixteen percent of the cases had FeNO levels ≥49 ppb with the median of 94.8 ppb. In the cases with FeNO levels <49 ppb, the median was 20.9 ppb. Asthma exacerbation occurred more often in those with FeNO levels ≥49 ppb than in those with the levels <49 ppb (22.2% vs 8.5%, $P = 0.223$). Successful step-down treatments were more commonly achieved in the patients with FeNO levels <49 ppb than in those with the levels ≥49 ppb (57.4% vs 11.1%, $P < 0.05$). FeNO levels ≥49 ppb was significantly correlated with maternal atopy ($P = 0.021$) and the longer duration of asthma ($P=0.045$). There was a significant correlation between the FeNO levels and the percent improvement of FEV1 after bronchodilator ($r = +0.300$, $P = 0.026$).

CONCLUSIONS: Asthma exacerbation occurred more often among those with FeNO levels ≥49 ppb. Step-down treatments were more successful in those with FeNO levels <49 ppb