Peripheral mononuclear cell response to nonspecific antigenic stimulation in children with obese asthma phenotype

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Body: Background: Investigation of immunopathogenetic mechanisms of obesity associated asthma may demonstrate novel therapeutic targets. Objective: The aim of this study was to compare levels of Th1, Th2, Treg and Th17 cytokines secreted by peripheral mononuclear cell culture (PBMC) in response to nonspecific stimulation in obese and nonobese children with asthma. Methods: Obese and nonobese children with asthma aged 5 to 16 were enrolled into this case-control study consecutively. Age at asthma diagnosis and clinical severity were recorded. Skin prick test was performed. Serum adipokine levels as well as PBMC supernatant IL-4, IL-10, IL-17, IL-23, IFNγ and TGF-β levels were measured. Results: Mean (± standard deviation) ages of obese (n=28) and nonobese (n=39) children with asthma were 8.7 ± 2.9 and 10.5 ± 3.2 respectively. Asthma symptom score was higher and age at asthma diagnosis was lower in obese compared to nonobese children with asthma (p=0.03 and p=0.004 respectively). Leptin levels were significantly higher in obese than nonobese asthma group (p<0.001). IL-10 and IL-17 levels in obese group was significantly lower than nonobese group (p=0.005 and p=0.017 respectively). On the other hand, TGF-β levels were significantly higher in obese compared to nonobese children with asthma (p=0.015). IL- 4, IL-23 and IFNγ levels were not significantly different between the groups (p<0.05 for all). Conclusion: Low IL-10 and high TGF-β levels in obese compared to nonobese children with asthma might indicate lower antiinflammatory cytokine secretion and regulatory T lymphocyte function as well as a higher remodelling process in obesity associated asthma in children.