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Title: New outlook on the Th1/Th2-alternative signaling pathways in asthma

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Body: Lymphocytes signal systems cross-talk interactions present complex net consisting of receptors, enzymes and transcription factors. Materials & Methods: 21 healthy controls, 97 patients with allergic (atopic) and non-allergic BA were examined. Transcription factors STAT6, STAT4, GATA-3 and T-bet expressed in peripheral mononuclears were analyzed by Western blot after cells were lysed. Preparation of cell lysates, and Western blotting were performed through standard procedure. Antibodies against STAT6 (Cell Signaling Technology, USA), STAT4 (Abcam, UK), T-bet (Santa Cruz Biotechnology, UK), GATA-3 (Abcam, UK) were used. The level of protein was analyzed according to β -actin using anti-actin antibody (Sigma Aldrich, USA). Results: we revealed strong correlation between STAT4 and T-bet levels, what is obviously may be explained by these factors belonging to IL-12 signal pathway. This effect was not observed only in non-allergic asthma patients, what may be caused by defect in Th1/Th2 regulation interactions. Besides, decrease in STAT4 expression in allergic asthma patients was shown, what may indicate malfunction of IL-12-signaling pathway in allergic asthma. Decreased and less significant level of correlation between T-bet and STAT6 expression was observed after IL-4 action in healthy persons. On the contrary, increasing of this level was revealed after IL-12 action, what may be caused by activation of regulatory pathways directed to Th1/Th2 cytokine balance restoration. It may be supposed, that revealed changes in analyzed transcription factors expression levels are connected with clinical and pathogenetic asthma features and probably reflect genetic determination of biology defects in Th1/Th2 alternative pathways.