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Title: The role of transcription factor PAX-5 (BSAP) in asthma severity and in the activity of allergic inflammation

Prof. Dr Valeriy 10085 Mineev vnmineev@mail.ru MD ¹, Dr. Lada 10086 Sorokina lada_sorokina@mail.ru MD ¹, Dr. Michael 10087 Nyoma nyoma1@yandex.ru MD ¹, Dr. Georgiy 10088 Lipkin nyoma1@yandex.ru MD ¹, Dr. Valeria 10089 Lim limvaleria@mail.ru MD ¹, Dr. Anna 10229 Eremeeva lada_sorokina@mail.ru MD ¹, Dr. Yulia 10237 Malfygina lada_sorokina@mail.ru MD ¹, Dr. Vasiliy 10313 Ivanov nyoma1@yandex.ru MD ¹ and Prof. Dr Vasiliy 11056 Trofimov trofvi@mail.ru MD ¹. ¹ Department of Hospital Therapy, Saint-Petersburg State Pavlov's Medical University, Saint-Petersburg, Russian Federation, 197022 .

Body: PAX-5 is transcription factor of B-cell, which is crucial in asthma pathogenesis. The aim is to evaluate PAX-5 role in allergic (AA) and non-allergic asthma (NAA). Materials and methods. Peripheral blood lymphocytes from 107 asthma patients and 22 healthy were examined. Part of lymphocytes was analyzed after 24h incubation with and without IL-4 10 ng/ml. To estimate PAX-5 and CHe (constant parts of IgE heavy chains) mRNA semi-quantitative RT-PCR was performed. Results: PAX-5 mRNA levels were significantly increased in patients with NAA in comparison with healthy ($p=0,018$) and AA patients ($p=0,03$) (U-crit.). We revealed important positive correlations of PAX-5 with CHe which were stronger in patients with normal and low serum IgE (≤ 150 MU/ml) than in patients with high serum IgE levels (>150 MU/ml) ($r=0,543$; $p<0,001$; $n=53$ and $r=0,474$; $p=0,017$; $n=25$ resp.). We revealed significant negative correlations of PAX-5 with sputum leucocytes and eosinophiles amount in patients with AA ($\rho=-0,390$; $p=0,040$; $n=28$ and $\rho=-0,385$; $p=0,043$; $n=28$ resp.). Significant decrease of mRNA PAX-5 was registered in lymphocytes from AA patients after 24h IL-4 action ($p=0,046$; $n=13$, W-crit.). This decrease was not significant in healthy ($p=0,345$; $n=5$, W-crit.). Conclusion: We revealed the association of PAX-5 and NAA development. It may be explained by fact of PAX-5 prolonging B-cell life and its functioning as antigen-presenting cell. In patients with AA PAX-5 may be considered as protective factor. IL-4 may influence PAX-5 expression through the pathways which are involved in asthma pathogenesis (e.g. STAT6 signaling). The work was supported by Saint-Petersburg government grant (No. 4/04-05/1-A).