TORAKS 2018

8. Kongres Hrvatskog torakalnog društva

8th Congress of Croatian Thoracic Society

18.–21. travanj | april
Hotel Westin Zagreb

NLRP1 FUNCTIONAL POLYMORPHISM RS12150220 (L155H) IS ASSOCIATED WITH LUNG FUNCTION (FEV1 AND FEV1/FVC) AND IS A PROTECTIVE FACTOR IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) DEVELOPMENT

Ozretić P.[1], da Silva Filho M. I.[2], Catalano C.[2], Sokolović I.[3], Vukić Dugac A.[3], Šutić M.[1], Kurtović M.[1], Bubanović G.[3], Popović-Grle S.[3], Škrinjarić Cincar S.[4,5], Vugrek O.[1], Jukić I.[6], Rumora L.[7], Samaržija M.[3], Bals R.[8], Jakopović M.[3], Försti A.[2], KNEZEVIC J. K.[1]

[1] Ruđer Bošković Institute, Zagreb, Croatia
Division of Molecular Medicine

[2] German Cancer Research Center, DKFZ, Heidelberg, Germany
Division of Molecular Genetic Epidemiology

[3] University of Zagreb School of Medicine, University Hospital Centre Zagreb, Zagreb, Croatia
Department for Respiratory Diseases Jordanovac,

[4] "J. J. Strossmayer" University , Osijek, Croatia
School of Medicine

[5] Universitiy Hospital Center Osijek, Osijek, Croatia
Department of Pulmology

[6] Croatian Institute of Transfusion Medicine, Zagreb, Croatia
Croatian Institute of Transfusion Medicine

[7] Faculty of Pharmacy and Biochemistry, University of Zagreb, Zagreb, Croatia
Department of Medical Biochemistry and Hematology

TORAKS 2018

8. Kongres Hrvatskog torakalnog društva

8th Congress of Croatian Thoracic Society

18.–21. travanj | april
Hotel Westin Zagreb

[8] Saarland University, Homburg, Germany
Department of Internal Medicine V - Pulmonology, Allergology, Intensive Care Medicine

[9] Clinical Research Center, Lund University, Malmö, Sweden
Center of Primary Health Care Research

Objective: Background and objective: Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory disease associated with exposure to noxious agents, like cigarette smoke. However, only 15-20% of smokers develop COPD, suggesting genetic susceptibility to the disease. Here, we evaluated the frequency of comorbidities, their impact to overall survival and association with genetic background of innate immune response. We hypothesized that polymorphisms located in the NLRP genes would be associated with pathogenesis and phenotype of COPD.
Methods: COPD individuals (n=704) and healthy controls (n=1238) of Croatian ancestry were recruited for the purpose of this study. Genotyping was performed for 20 SNPs located in 10 different NLRP genes. Genetic associations were estimated using logistic regression and adjusted for age, gender and smoking history. Impact of genotypes, clinical parameters and comorbidities on patients' overall survival was estimated by Kaplan–Meier method with the log-rank test.
Results: Functional polymorphisms in NLRP1 (rs12150220; odds ratio (OR)=0.54; p=0.03) and NLRP4 (rs12462372; OR=0.36; p=0.03) were independent protective factors in COPD development. Lung function, measured in forced expiratory volume in 1 second (FEV1), was associated with heterozygosity in NLRP1 rs12150220 (p=0.0001), while FEV1/FVC ratio (Tiffeneau index) was associated with homozygosity of major allele (p=0.003). NLRP8 rs306481 was associated with increased FEV1 (p=0.047) and milder GOLD status (p=0.0002).
Conclusion: We found several functional polymorphisms in the NLRP genes that show nominal association with COPD development and disease severity, indicating that fine-tuning of inflammasome activation could be an important factor in maintaining lung tissue integrity and chronic inflammation of the airways.