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Immunogenetic factors influencing hypersensitivity to the anesthetic drugs

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Statement of the Problem: Adverse drug reactions remain a common and major problem in healthcare. Drug-induced hypersensitivity reactions (DHRs) are of major concern due to their frequent severe nature, high rate of hospital admissions and high mortality . A number of recent studies demonstrated that drug-induced hypersensitivity reactions possess strong genetic predisposition, specifically, different combinations of class I and class II human leukocyte antigens (HLA) and natural killer immunoglobulin-like receptors (KIRs) may be associated with the development of drug allergy. The purpose of the study is to identify risk-factors associated with anesthetic drug-related hypersensitivity and study combinations of HLA and KIR genotypes influencing the development of drug allergy. Allergy to anesthetic agents are evaluated by skin tests and venous blood tests for presence of allergen-specific immune globulins type E (IgE) by Enzyme-linked Immunoassay (ELISA). HLA and KIR typing are performed by PCR using sequence-specific oligonucleotide probes (SSOP).

Findings: The independent risk-factors for development of drug allergy includes presence of allergy to the different types of allergens among patients' mothers and sibships, presence of drug allergy in one or in both patients, presence of food allergy in addition to the drug allergy among patients, presence of current or recent infectious diseases and specific HLA/KIR profiles.

Conclusion & Significance: Obtained results will contribute to our knowledge about the genetic and immunologic factors associated with the allergic reactions to anesthetic agents which will help in development of preventive strategies. HLA allelic associations may also be clinically beneficial through use as tests of exclusion and diagnostic aids.

Recent Publications

1. Kamkamidze G, Butsashvili M, Gendzekhadze K. Immunogenetic factors influencing clinical course of HCV infection. Georgian Med News. 2016 Sep;(258):84-9.
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3. Kamkamidze G, Kikvidze T, Butsashvili M, Chubinishvili O. Factors Associated with Persistence of Hepatitis B Virus Infection. Journal of Liver 2014; 3: 153-6.
4. Bouscaillou J, Champagnat J, Luhmann N, Avril E, Inaridze I, Miollany V, Labartkava K, Kirtadze I, Butsashvili M, Kamkamidze G, Pataut D. Hepatitis C among people who inject drugs in Tbilisi, Georgia: An urgent need for prevention and treatment. Int J Drug Policy 2014 Sep;25(5):871-8
5. Norman PJ, Abi-Rached L, Gendzekhadze K, Hammond JA, Moesta AK, Sharma D, Graef T, McQueen KL, Guethlein LA, Carrington CV, Chandanayingyong D, Chang YH, Crespí C, Saruhan-Direskeneli G, Hameed K, Kamkamidze G, Koram KA, Layrisse Z, Matamoros N, Milà J, Park MH, Pitchappan RM, Ramdath DD, Shiau MY, Stephens HA Struik S, Tyan D, Verity DH, Vaughan RW, Davis RW, Fraser PA, Riley EM, Ronaghi M, Parham P. Meiotic recombination generates rich diversity in NK cell receptor genes, alleles, and haplotypes. Genome Research 2009; 19(5): 757-69.

Biography

Tamar Kemoklidze has passion in improving the health and wellbeing. She is allergist-immunologist and PhD student. Her study is about allergic reactions to anesthetic agents and risk-factors for their development. This work was supported by Shota Rustaveli National Science Foundation (SRNSF) [PHDF-18-2954, Immunogenetic factors influencing hypersensitivity to the anesthetic drugs].

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