

Abstract

The Role of Single-Nucleotide Variants of *NOS1*, *NOS2*, and *NOS3* Genes in the Comorbidity of Arterial Hypertension and Tension-Type Headache

Regina F Nasyrova¹, Natalia A Shnayder^{1,2}, Marina M Petrova² and Polina V Moskaleva^{2*}

¹V.M. Bekhterev National Research Medical Center for Psychiatry and Neurology, Saint-Petersburg, Russia

²V. F. Voino-Yasenetsky Krasnoyarsk State Medical University, Krasnoyarsk, Russia

Published April 24, 2021.

ABSTRACT

Patients with tension-type headache (TTH) have an increased risk of developing arterial hypertension (AH), while hypertensive subjects do seem to have an increased risk of TTH. We searched for full-text English publications in databases using keywords and combined word searches over the past 15 years. In addition, earlier publications of historical interest were included in the review. In our review, we summed up the single nucleotide variants (SNVs) of Nitric Oxide Synthases (*NOSs*) genes involved in the development of essential AH and TTH. The results of studies we discussed in this review are contradictory. This might be due to different designs of the studies, small sample sizes in some of them, as well as different social and geographical characteristics. However, the contribution of genetic and environmental factors remains understudied. This makes the issue interesting for researchers, as understanding these mechanisms can contribute to a search for new approaches to pathogenetic and disease-modifying treatment of the AH and TTH phenotype. New drugs against AH and TTH can be based on inhibition of nitric oxide (NO) production, blockade of steps in the NO-cGMP pathway, or NO scavenging. Indeed, selective neuronal NOS (n-NOS) and inducible NOS (i-NOS) inhibitors are already in early clinical development. Thus, we decided to start a multicenter associative genetic study of the AH and TTH phenotype. There are research teams from two centers: Professor V.F. Voino-Yasenetsky KrasSMU and V.M. Bekhterev NRMCM. At the moment, the project is underway in two regions of Russia (Siberian and Northwestern Federal Region). Our research is ongoing. So, we invite colleagues for cooperation!

Keywords: Nitric oxide, Nitric oxide synthase, Single nucleotide variants, NOS1, NOS2, NOS3, Arterial hypertension, Tension-type headache

Corresponding author: Polina V. Moskaleva, V. F. Voino-Yasenetsky Krasnoyarsk State Medical University, 1, Partizan Zheleznyak Str., Krasnoyarsk, Russian Federation 660022, E-mail: polina-moskaleva@yandex.ru

Citation: Nasyrova RF, Shnayder NA, Petrova MM & Moskaleva PV. (2021) The Role of Single-Nucleotide Variants of *NOS1*, *NOS2*, and *NOS3* Genes in the Comorbidity of Arterial Hypertension and Tension-Type Headache. J Neurosurg Imaging Techniques, 6(S1): 22.

Copyright: ©2021 Nasyrova RF, Shnayder NA, Petrova MM & Moskaleva PV. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.