

Abstract

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

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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

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