Familial epilepsy – clinical-epidemiological characteristics and next-generation sequencing in the Republic of Moldova's population

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Abstract

Background: Although several theories are implicated in the origin of epilepsy, its cause is still unknown in about 50% of cases. To associate a gene with epilepsy for the first time, families with multiple affected members are needed. The aim of our study is carrying out a clinical-genetic study of multiplex families from the Republic of Moldova, for estimating the genetic biomarkers and establishing their weight in epileptogenesis.
Material and methods: An epidemiological, descriptive study (2018 – 2023) started with lancing a National Epilepsy Registry for multiplex families. Whole Exome Sequencing (WES) was performed on the first 11 families. Preliminary statistical methods were applied.
Results: Our National registry counts now 74 families including 186 members. First 11 families' WES results showed that the most involved chromosomes with candidate epileptogenic variants are the 1, 2, 3, 4, 7, 12, and 17. Top affected genes are the AUTS2, ATXN1, KCNMA1, IRF2BPL, SUFU, CENPE, SACS, EDC3, RYR2, ANKRD11, PTPRD, CHL1, MYH1, CC2D2A, LIAS, TBCD and AARS. From all the detected variants, 20.3% were classified as deleterious and probably pathogenic, 38.9% were marked as tolerated and benign and 22.8% were variants of unknown significance (VUS).
Conclusions: Our results represent an absolute novelty for our country, such studies having been never previously performed. Subjects continue to be recruited and the National Register of presumed genetic epilepsy is constantly being updated.
Key words: epilepsy genetics, whole exome sequencing, multiplex epilepsy families.

Update on current knowledge on poststroke epilepsy

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Abstract

Background: The main cause of seizures in adults beyond the age of 60s is represented by cerebrovascular diseases, mainly hemorrhagic and ischemic strokes. Poststroke epilepsy (PSE) is one of their complications, that leads to poorer quality of life, higher mortality, greater health expenditures and affecting the functional recovery after stroke. The aim of the study was to identify the factors involved in the occurrence of epileptic seizures after stroke and to summarize them in order to identify potential biomarkers of PSE. A literature review was initiated, based on the following keywords: "epilepsy", "stroke", "poststroke seizures", "poststroke epilepsy" which were searched on PubMed database. The following filters were applied: publication date – 5 years, species – humans, age of subjects – 18+, language – English. 320 results were identified, from which only Meta-analyses (1), Reviews (18) and Systematic Reviews (4) were analyzed (total – 23 papers). Studies report an overall incidence of early post-ischemic stroke seizures ranging from 2% to 33%, while that of late seizures spans from 3 to 67%. Seizure activity is identified in up to 8 – 13% of patients following intracerebral hemorrhage. In recent years, more studies started to evaluate blood biomarkers associated with the occurrence of PSE leading to the hypothesis that they are more accurate for the prognostic of PSE.
Conclusions: Diagnosis of PSE is often challenging because of the diversity of clinical manifestations. However, there are no reliable guidelines in clinical practice regarding most of the fundamental issues of PSE management.
Key words: epilepsy, stroke, poststroke seizures, poststroke epilepsy.