Editorial
Volume 7:2, 2021

Epilepsy Journal

ISSN: 2472-0895 Open Access

Epilepsy Biomarker: Editorial Note

Shiva Bhardwaj*

Department of Medical Biotechnology, Dr D.Y.Patil Biotechnology & Bioinformatics Institute, Pune, India

Epilepsy is a group of chronic neurological disorders characterized by repeated, spontaneous, and unpredictable seizures. It's one among the foremost common medical specialty disorders, affecting tens of millions of people worldwide. Comprehensive studies on epilepsy in recent decades have revealed the complexity of epileptogenesis, in which immunological processes, epigenetic modifications, and structural changes in neuronal tissues have been identified as playing a crucial role. This review discusses the recent advances in the biomarkers of epilepsy. We evaluate the possible molecular background underlying the clinical changes observed in recent studies, focusing on therapeutic investigations, and the evidence of their safety and efficacy in the human population.

A biomarker is outlined as associate objectively measured characteristic of a normal or pathological biological process. Identification and correct validation of biomarkers of epileptogenesis, the development of epilepsy, and ictogenesis, the propensity to get spontaneous seizures, would predict the development of an epilepsy condition; identify the presence and severity of tissue capable of generating spontaneous seizures; measure progression after the condition is established; and determine pharmacoresistance. Such biomarkers could be used to create animal models for more cost-effective screening of potential antiepileptogenic and antiseizure drugs and devices, and to reduce the cost of clinical trials by enriching the trial population, and acting as surrogate markers to shorten trial duration. The objectives of the biomarker subgroup for the London Workshop were to define approaches for identifying possible biomarkers for these purposes. Research to identify reliable biomarkers may also reveal underlying mechanisms that could serve as therapeutic targets for the development of new antiepileptogenic and antiseizure compounds.

The development of pharmaceutical agents and devices to treat, cure, and prevent epilepsy would profit greatly from the identification of definitive biomarkers capable of reducing the value of discovery and validation of new therapies for epilepsy. In theory, biomarkers might facilitate the development of interventions to stop epilepsy; and also to prevent the prevalence of epileptic seizures, reverse progression of epilepsy, and potentially even cure epilepsy after it is established. Although seemingly less likely, biomarkers could be used to identify and effectively treat pharmacoresistant epilepsy.

The Role of the Complement System in Epilepsy

The complement system is composed of more than 30 proteins which interact in a strictly organized manner to destroy pathogenic agents and to protect normal tissues from the deposition of immune complexes. There are three pathways leading to complement activation: classic, alternative and lectin. Each pathway leads to the activation of fragment C3, which is cleaved to form opsonin C3b and C3a, promoting the activation of the lytic pathway, acting as anaphylotoxin and causing damage to cell membranes and pathogens. C5a formed through this process attracts macrophages and neutrophils, and also activates mast cells. The complement system plays a critical role in the innate immune system and is one of the main mechanisms of the effector adaptive humoral response. It mediates the reaction against infectious agents through a coordinated sequence of the enzymatic cascade, leading to the elimination of foreign cells by pathogen recognition, opsonization, and lysis .Although it is essential in maintaining immune balance, inappropriate activation of the complement cascade can lead to tissue damage and contribute to the development and progression of various pathologies.

***Address for Correspondence:** Shiva Bhardwaj, Department of Medical Biotechnology, Dr.D.Y.Patil Biotechnology & Bioinformatics Institute, Pune, India, E-mail: bhardwajshiva97@gmail.com*

Received 30 March 2021; **Accepted** 02 April 2021; **Published** 08 April 2021

How to cite this article: Shiva Bhardwaj. Epilepsy Biomarker: Editorial Note. Epilepsy J 7 (2021): e139.