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## Update of Epilepsy

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Past decade has been remarkable for rapid progress in the clinical, translational, and basic science realms in Epileptology. Large scale population-based genomic studies, research into mechanisms of epileptogenesis, introduction of electrophysiological markers of epileptogenic zone by broad-band recording, introduction of new drugs and closed-loop electrical stimulation studies for treatment of epilepsy, and investigations for epilepsy network by using neuroimaging and optogenetic techniques brought new concepts to improve our clinical practice.

Among those, a recent publication related to the "Operational Definition of Epilepsy" by International League Against Epilepsy(ILAE) brought extensive discussions and commentaries, which may exert significant impact on our daily practice, which is the main target of my talk in this session of "Update in Epilepsy".

Traditionally epilepsy was defined as a condition characterized by recurrent(two or more) epileptic seizures, unprovoked by any immediate identified cause(ILAE-Commission on Epidemiology, Epilepsia 1993). This definition was revised as "a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures" in 2005 by ILAE and IBE-Task Force (Fisher et al., Epilepsia 2005), thus epileptologists were able to make a diagnosis of epilepsy in patients presenting with a single seizure. However, the practice was limited by lack of operational definition, which has raised lasting debates and controversies about clinical definition of enduring predisposition to generate seizures. In this April issue of Epilepsia, ILAE-TF led by Dr. R Fisher published the operational definition of epilepsy consisting of (1) at least two unprovoked (or reflex) seizures occurring >24 hours apart, (2) one unprovoked(or reflex)seizures and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years, and (3) diagnosis of an epilepsy syndrome. In addition, the ILAE-TF provided a new definition to allow a possible end to the burden of having epilepsy, which was written as "Epilepsy is considered resolved for individuals who had an age-dependent epilepsy syndrome but are now past the applicable age or those who have remained seizure-free for the last 10 years, with no seizure medicines for the last 5 years".

This new operational definition is expected to sensitize clinicians to assess the risk of recurrence and make appropriate diagnosis after a single seizure and help prevent risks from recurrent seizures. It may also expand opportunities for application of disease modifying interventions at earlier phase of disease. However, this new definition may affect previous epidemiological, clinical, and research data, which need to be reformed. There are also risks related to the earlier diagnosis of epilepsy, which may include unnecessary stigma and social restrictions resulting from the diagnosis as well as adverse effects of Antiepileptic drug therapy. Apparently the impact on psychosocial stigma, legislation, and health economics need to be reperussed by future assessment of improved management of single seizure. Another criticism against the operational definition is that we don't have any good data related to the probability of future seizures in patients presented with a single seizure, which requires further epidemiological and prospective studies for better assessment in individual patients.

**Key Words:** Operational definition; Enduring predisposition; Epilepsy resolved; Single seizure

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