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New Insights on Child Epilepsy

Hung Kun Long*

Professor of paediatrics, Fu-Jen Catholic University, Taiwan

Short Communication

Among all the neurological disorders in children, epilepsy is the most common disorder and perhaps the most burdensome. Epilepsy mostly starts in the childhood. Children with uncontrolled and untreated seizures are prone to psychiatric disorders and the cognitive malfunctioning. Such children are also at high risk of injury and comorbidities [1]. Epileptic encephalopathies including the onset infantile spasms if not treated in a timely manner can potentially worsen the growth and development. Infants and immune-compromised children are susceptible to severe infections. During the recent COVID-19 pandemic, children were less affected than adults and consequently the health care machinery and the resources were mostly diverted to the healthcare of the adults [2]. The availability of the protective equipment, medicines and secondary care were all focused on the adults. Nevertheless, other methods of child care such as telemedicine have strengthened. The risk for contracting an infection has deferred the primary health care visit of the children [3]. The inpatient admissions and the surgeries were limited to life threatening conditions.

Certain cross sectional online surveys involving the pediatric neurologists and pediatric epilepsy research consortia across several countries has revealed that COVID-19 has dramatically impacted the pediatric epilepsy care and has significantly affected access to the electroencephalography (EEG) and resulted in the altered management of infantile spasms, restriction of the ketogenic diet and lack of availability of epilepsy monitoring units and significant number of cancelled epileptic surgeries. However, the tele-medicine and the online consultations have increased [4]. There could be long term impact of delay in child health care during the COVID-19 pandemic that needs to be considered.

from seizures is often associated with the better psycho-sociological interactions and improved quality of life. Therefore, the surgical procedures are being increasingly used for the treatment of pediatric patients with refractory epilepsy. Based on the interviews with parents and children who have undergone epilepsy surgeries, it was revealed that epilepsy had significant impact on the quality of life both for the parents and the children. In view of long term well-being and the risk versus safety assessment and hope for normal life have propelled the parents to opt for the epileptic surgery. The operations are often successful and the resulted in the improvement of seizures which also improved the psycho-sociological well-being, improved quality of life, social relationships and family bonding. Children with epilepsy and their parents face impediments in the psychological well-being and socio-economic productivity [5]. Therefore, a greater emphasis has been laid on the communication between the parents and children and with the society for overall psycho-sociological well-being.

Tuberous sclerosis complex occurs due to mutations in the TSC 1 and TSC 2 genes. This results in the formation of the tumors in the brain and other organs. This disease causes severe and drug resistant epilepsy with focal seizures and infantile spasms. This also leads to hampering of the neurodevelopment, intellectual disability and autism. Electroencephalography based monitoring was suggested for infants with TSC as it provided better clinical outcomes than treatment after the occurrence of clinical seizures. Therefore, preventive treatment with vigabatrin was suggested to be preferable as it prevented the onset of seizures, delayed the onset of the epilepsy and prevented infantile spams.

Cannabinoids derived from cannabis were found to exhibit neurological activation properties. Recently there is greater interest in the use of cannabinoids and cannabinoid enriched products for the treatment of the epilepsy that are resistant to drugs. The US FDA has approved the cannabinoid rich drug also known as Epidiolex for the treatment of epilepsy in children suffering severe forms of epilepsy [6]. The experimental results suggest the use of cannabinoids for the treatment of epilepsy and central nervous system disorders however, the anticonvulsant and neuro-protective effects of the cannabinoids are unclear. Cannabinoids have shown the potential to reduce the inflammation of the nerves, protection of the nerves from the neuronal loss, normalization of the neurogenesis and function as antioxidant. Cannabinoids exhibit multimodal effect on the human brain. Therefore the cannabinoids are potentially useful for the treatment of refractory epilepsies and other seizure conditions. The clinical trials for the treatment of the infantile spasms, tuberous sclerosis and Rett syndrome are being conducted. Adjunct form of therapy using the cannabinoids were found to be safe and effective for the treatment of seizures that are resistant to the drugs and other modes of treatment and among children having severe early onset epilepsy.

Another alternative approach for the treatment of the drug resistant epilepsy is the vagus nerve stimulation. This is carried out using an implantable transcutaneous device that was approved in both USA and Europe. It was observed that this form of treatment takes about six months of time for optimal performance and can potentially reduce the frequency of the seizures by fifty to one hundred percent. Since the device is noninvasive in nature it is safe for usage and effective as well.

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***Address for Correspondence:** Hung Kun L, Professor of paediatrics, Fu-Jen Catholic University, Taiwan,Tel: + 6828889822 Email: Hungkun_l@gmail.com*

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