



Service Priorities and Programmes
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Comprehensive Inter-disciplinary Paediatric Refractory Epilepsy Program from Neurophysiology to Neurorehabilitation & Community Integration: A Clinical Audit of Seizure and Psycho-behavioural Outcome after Epilepsy Surgery and Ketogenic Diet from A Tertia

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Introduction

Patients with refractory epilepsy not only suffer from seizure and side effect of multiple anticonvulsants, but also have developmental, behavioural, psychological and cognitive problems. Epilepsy Surgery and Ketogenic Diet could be an effective treatment option for these children.

Objectives

To audit the seizure and psycho-behavioural outcome of patients with medical refractory epilepsy after epilepsy surgery (from 2005 to 2014) and ketogenic diet (from 2000 to 2014).

Methodology

A comprehensive evaluation of each patient by multi-disciplinary team include: Neurologist, Neurosurgeon, EEG technologist, Radiologist, Clinical Psychologist, Dietitians, Child Psychiatrist, Chemical Pathologist to offer multi-dimensional investigations include: LT- Video EEG monitoring,MRI,ictal SPECT and PET, Neuro-psychological and psychiatric assessment. Genetic studies and Metabolic work- up in selected conditions. After a good understanding of underlying etiologies, each patient is provided with best treatment options include: optimizing anticonvulsant treatment, Resective Epilepsy Surgery, Vagal Nerve Stimulator or Ketogenic Diet. Neuro-rehabilitation will be offered to selected patient to enhance their daily function and better school and community integration, especially those after epilepsy surgery.

Seizure outcome after surgical or dietary treatment measured for example, by Engel classification (Engel class I-IV); Those underwent epilepsy surgery, other outcome measured will be measured include: Intellectual and Memory outcome by Standard Neuropsychological test; Psycho-behavioural outcome and Quality of life by CBCL; any medication reduction. From 2005 to 2014, total 650 children underwent comprehensive evaluation include Video EEG and MRI imaging. 30 SPECT and 10 Wada test has been performed. 40 Intra-operative Electroencephalograms and two extra-operative Intracranial EEG monitoring and cortical mapping have performed.

Result

43 epilepsy surgeries performed include: 37 Curative Resective and Disconnection surgeries (19 Temporal Lobe Surgeries; 16 Extra-temporal Lobe Surgeries; 1 Temporo-Parieto-Occipital Disconnection and 1 Hemispherectomy); 6 Palliative surgeries (3 Corpus Callosotomy and 3 Vagal Nerve Stimulator Implantation). Patient age: 7 month - 23 year (mean age=9.3 year) Follow-up duration: 3 months- 9 years (mean =4.4 years) 79% (27/34) refractory patients showed significant seizure reduction (Engel Class I&II). one third became medication free; 14% had > 50% AEDs reduction; 11% had <50% AEDs reduction; 28% had no change in AEDs dosage and 8% had increased AEDs dosage. Two patients underwent re-operation and showed significant seizure reduction (Engel Class IV to IA; Engel Class IV to IIIA). In Temporal Lobe Surgeries N=19, 79% Engel Class I; 10 % Engel Class II; 10% Engel Class III&IV. In Extra-temporal Lobe and curative Disconnective Surgery N=16, 50% Engel Class I; 13% Engel Class II; 13% Engel Class III; 25% Engel Class IV. Complications: mild sensory loss, motor weakness improved after rehabilitation; partial visual field loss 3 Patients underwent corpus callosotomy, all have >90% reduction in drop attack. For 13 patients underwent temporal lobe surgeries, no significant deterioration of intellectual and memory function. 9 out of 26 patients underwent epilepsy surgeries had psycho-behavioural assessment; most patients had favorable behavioral outcome, quality of life after surgery. 3 patients underwent Vagal Nerve Stimulator Implantation, 2 showed improvement either reduce seizure duration and frequency or duration of postictal drowsiness From 2000 to 2014, 12 patients put on ketogenic diet. Patient age: 4 months to 11 years (mean 4.4 years) follow-up duration: 2 months -14 years (mean= 32 months) 42% had >50% seizure reduction; 42% had <50% seizure reduction; 16% no change. Most side effects were metabolic derangement improved after adjusting ingredients.