Hemispherotomy for syndrome and hemispheric epilepsy experience in Surabaya, Indonesia

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Hemispherotomy is a procedure to disconnect the hemisphere of the brain. This procedure provides the highest rate of seizure control (average 77–80%, class I Engel) when performed in the right properly indicated patients. Hemispherotomy has two major techniques, a vertical parasagittal approach that has been described by Delalande and perinsular approach described by Villemure. There are various number of techniques that have been developed based on the two major techniques which have less invasive procedure. We present our experience in treating intractable epilepsy that has been operated using hemispherotomy procedure from 2010 until 2014 in Neurosurgery Department, Faculty of Medicine, Airlangga University, Surabaya, Indonesia. We have five cases: Rasmussen's syndrome, West syndrome, Hemimegalencephaly, Proteus syndrome and Status epilepticus. All patients underwent workup for epilepsy surgery before the procedure.

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Extra-temporal seizure semiology – Central

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The localization of seizures is evident in the transient functional changes that occur during seizures, as can be assessed through several diagnostic tests. Beyond the electrophysiologic and imaging modalities, the patient's subjective experience and objective behavior during seizures are critical tests, and each of the other diagnostic tests must be validated as plausible in the context of the seizure manifestation (semiology). A critical facet to semiology is that the seizure manifestation does not necessarily indicate the epileptogenic region. More accurately, it indicates the symptomatogenic zone, that is, the zone where the seizure first becomes behaviorally evident. This may be the epileptogenic zone or the first eloquent cortex to become involved in the seizure as it spreads. Semiology may be approached by parcellating each cerebral hemisphere into 16 regions that differ in their associated seizure manifestation. Of these regions, primary motor, supplementary motor, primary sensory, and parietal association are collectively the central region. Each of these four regions may produce motor and sensory abnormalities, but the motor regions are, of course, more likely to produce motor and more likely to have a larger motor component when both motor and sensory activity are present. The complexity of the activity is differentiating and helps localize the region to either primary or supplementary/association. Simple and spreading jerks or sensations are more likely to be primary cortex. Complex and asymmetric movements are more likely to be supplementary motor, and cognitively complex somatosensory perception are more likely to be parietal association cortex.

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Modern concepts in the evaluation for epilepsy surgery

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The benefits of surgical treatment for epilepsy have been clear for many years, and evidence-based guidelines have reinforced the importance of surgical treatment for some forms of epilepsy. Overall, the benefits of surgery relate to both the high prevalence of medication-resistant epilepsy and also the increasing effectiveness of surgical treatment. However, much of the increasing effectiveness has emerged from advances in the surgical evaluation. The rising seizure-free rates after surgery for some forms of epilepsy relate to the greater specificity of the evaluation for the epileptogenic zone. Furthermore, the increasing numbers of candidates for surgical treatment relates to the greater sensitivity of the evaluation across diverse pathologic causes for epilepsy. Historically, the epilepsy surgery evaluation has progressed from the use of seizure manifestation, to intracranial EEG, and then to extracranial EEG with functional and then structural imaging. The inclusion of complementary techniques and the advances in resolution and interpretation have improved the evaluation substantially in the modern era, and considerable progress continues to result from new understanding on how to integrate the collection of diagnostic information. All of these advances have been predicated on the concept that focal seizures are due to a focal abnormality. Looking forward, we now are at the cusp of a shift toward conceptualizing epilepsy as network abnormality. With incorporation of this more sophisticated understanding into the evaluation of epilepsy, surgical success will hopefully continue to grow.

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Resting-state fMRI abnormalities in temporal lobe epilepsy

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The differentiation of epilepsies into focal and generalized has been undergoing reconsideration, as is evident in the 2010 ILAE definitions. Focal is no longer defined as limited to one region of cerebral tissue and is now defined as network(s) limited to one hemisphere. Moreover, generalized is no longer defined as distributed across the whole head and is now defined as bilaterally distributed networks that do not encompass the whole cortex. The evidence for value in this