

Typical semiology of focal & generalized epilepsy



Dong Wook Kim, MD

Department of Neurology, Konkuk University Hospital

Contents

- Introduction
- Semiology in focal seizures
 - Frontal lobe seizures
 - Temporal lobe seizures
 - Parieto-occipital lobe seizures
- Semiology in generalized seizures

2

Classification of Seizures

- Generalized seizures
 - Tonic-clonic (in any combination)
 - Absence
 - Typical
 - Atypical
 - Absence with special features
 - Myoclonic
 - Myoclonic
 - Myoclonic atonic
 - Myoclonic tonic
 - Clonic
 - Tonic
 - Atonic
- Focal seizures
- Unknown
 - Epileptic spasms

Revised Classification of Seizures and Epilepsy. Berg AT et al., 2010

Semiological Seizure Classification

Luders H. et al., 1998

Aura

Somatosensory aura
Auditory aura
Olfactory aura
Abdominal aura

Visual aura
Gustatory aura
Autonomic aura
Psychic aura

Autonomic seizure

Dialectic seizure

Motor seizure

Simple motor seizure

Myoclonic seizure
Epileptic spasm
Tonic-clonic seizure

Tonic seizure
Clonic seizure
Versive seizure

Complex motor seizure

Hypermotor seizure
Automotor seizure

Gelastic seizure

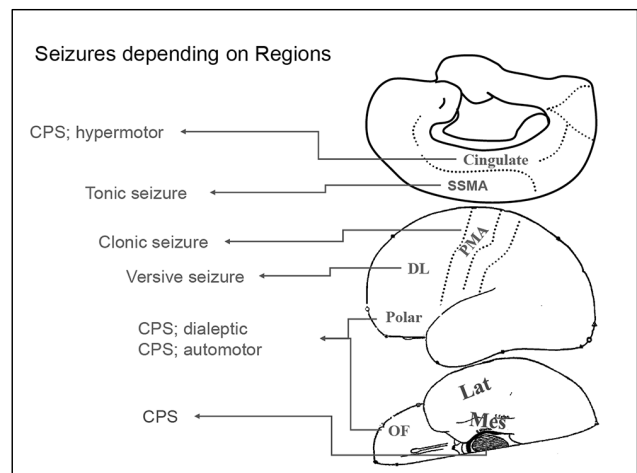
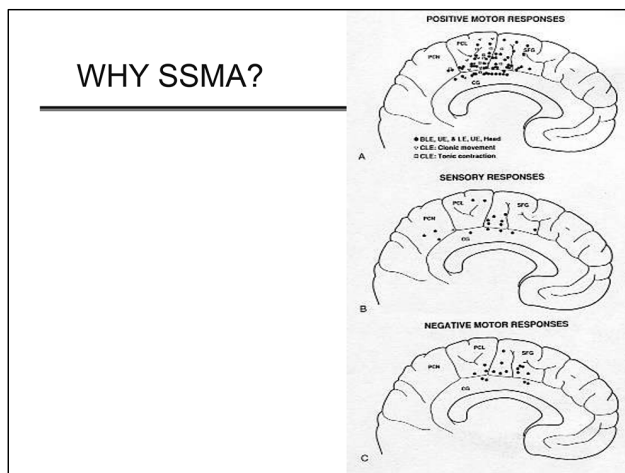
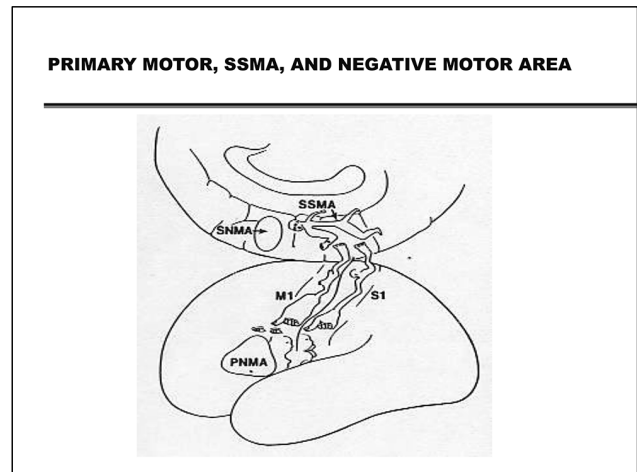
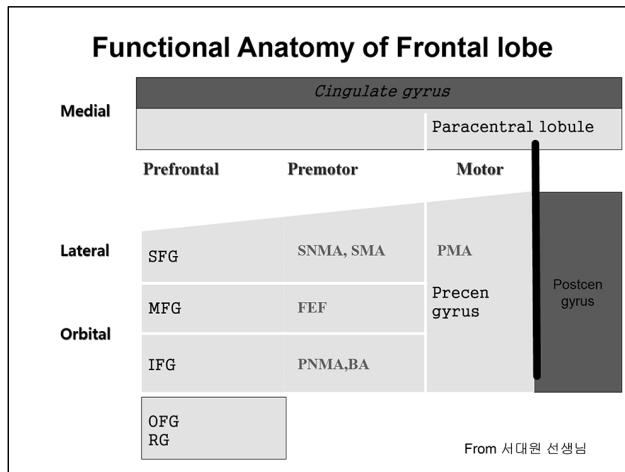
Special seizure

Atonic seizure
Hypomotor seizure
Negative myoclonic seizure

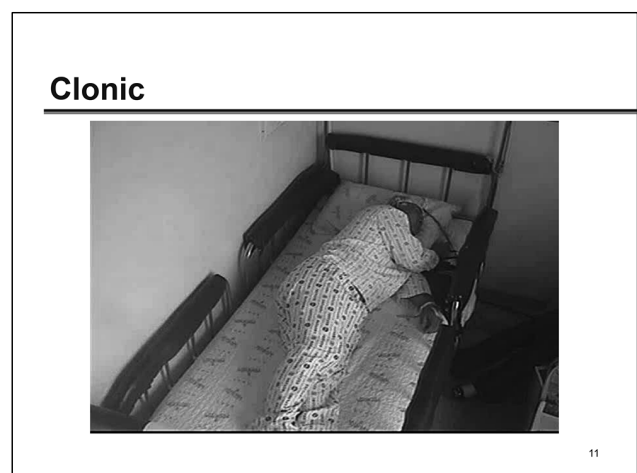
Astatic seizure
Akinetic seizure
Aphasic seizure

General Features of Frontal Lobe Seizures

- Not homogenous semiology (vs. temporal lobe seizure)
- Prominent motor phenomenon: focal clonic, asymmetric tonic, agitated semi-purposeful motor activity
- Frequent brief seizures occurring in clusters with nocturnal preponderance: A certain type of FLE



- ### Specific Types of FLE
- Focal motor seizure: primary motor, premotor
 - SSMA seizure: tonic including fencing posturing
 - Frontal complex partial: orbito-frontal, frontopolar
 - Dorso-lateral frontal: versive
 - Hypermotor seizure: prefrontal and cingulate



Tonic



12

Tonic (Fencing Posturing)



13

Versive



14

Frontal Complex Partial Seizure



15

Frontal Complex Partial

- Frequent
- Clustering
- Nocturnal tendency
- Brief
- Hypermotor activity
- Little postictal confusion

Hypermotor



17

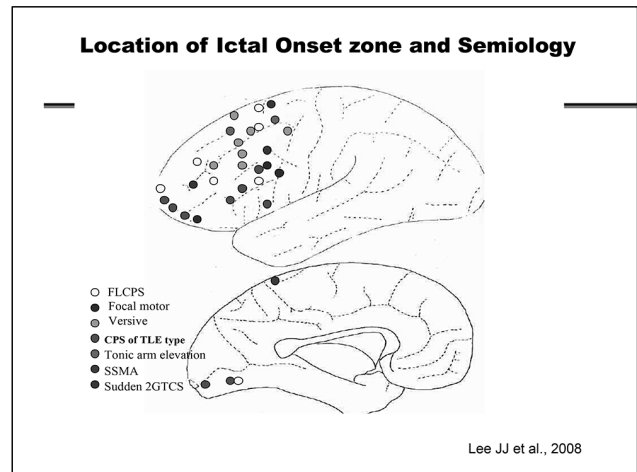
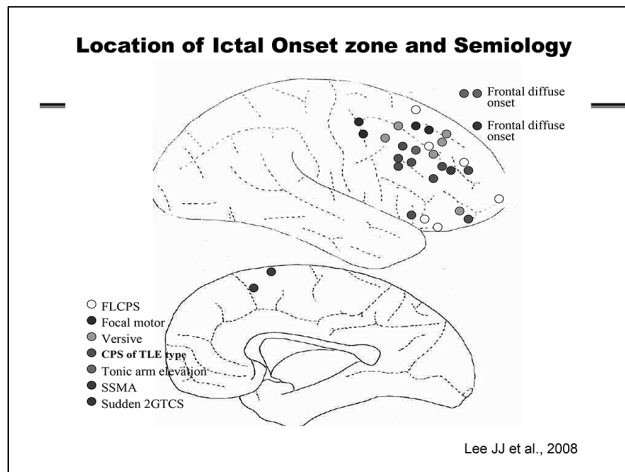


Figure (of) Four Sign

- Aymmetric tonic limb posturing
 - Rigid extension of one arm at the elbow, often with the fist clenched and flexed at the wrist, while the opposite extremity is flexed at the elbow
- Useful lateralizing sign in 2GTCS
 - Occur in tonic phase of a GTCS
 - Ictal onset is contralateral to the extended arm in 92%
- Ictal onset from SSMA or prefrontal areas

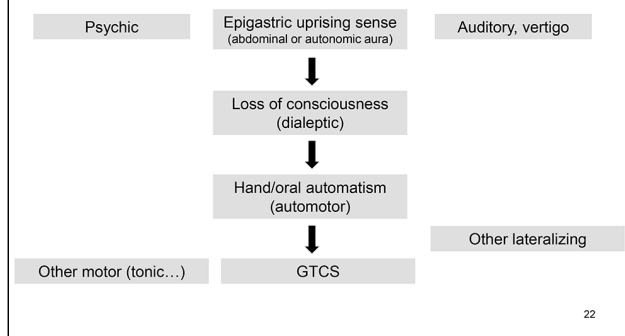
From E-Pearl of the week, Neurology, 2011 ²⁰

Figure 4 sign



21

Temporal Lobe Seizure



Temporal Complex Partial Seizure



23

Ictal Speech



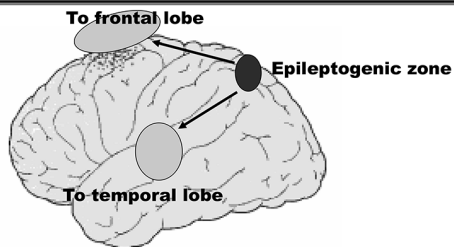
24

Localizing or Lateralizing Signs

- Language
 - Ictal speech: non-dominant
 - Ictal aphasia: dominant
- Motor
 - Early head turning: ipsilateral
 - Unilateral eye blinking: ipsilateral
 - Unilateral automatism: ipsilateral
- Autonomic
 - Piloerection: Lt temporal
 - Ictal spitting or emeticus: Rt temporal

25

Parital Lobe Seizures



Spreading Pathways of PLE

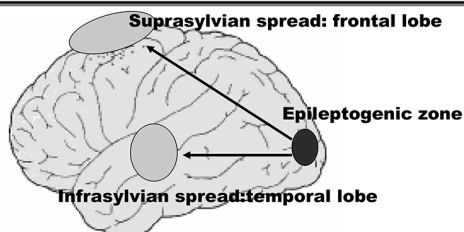
Auras in PLE

Aura	Number of patients (%)
Somatosensory	13 (32.5)
Affective	6 (15)
Vertigo	4 (10)
Visual	4 (10)
Autonomic	3 (7.5)
Gustatory	3 (7.5)
Auditory	1 (2.5)
Mnemonic	1 (2.5)

Aura was present in 27 out of 40 patients

Kim DW et al., 2004

Occipital Lobe Seizures



Spreading Pathways of OLE

Importance of Initial Symptoms in Occipital Lobe Seizures

- Visual aura
- Eye phenomenon: Forced eye closure, rhythmic eye blinking, rapid eye blinking, eye lid flutter, etc.

Auras in OLE

Aura	Number of patients (%)
Elementary visual hallucination	9 (34.6%)
Visual illusion	7 (26.9%)
Blindness and field defect	4 (15.4%)
Dizziness	4 (15.4%)
Epigastric rising sense	2 (7.7%)

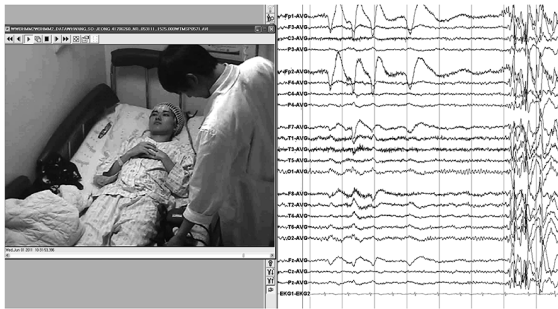
Aura was present in 22 out of 26 patients
Multiple auras can be present in one patient

Lee SK et al., 2005

Eyelid Blinking



Myoclonic



32

Absence

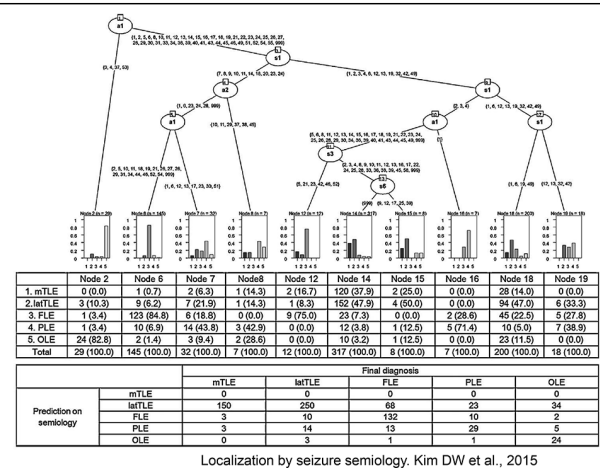


33

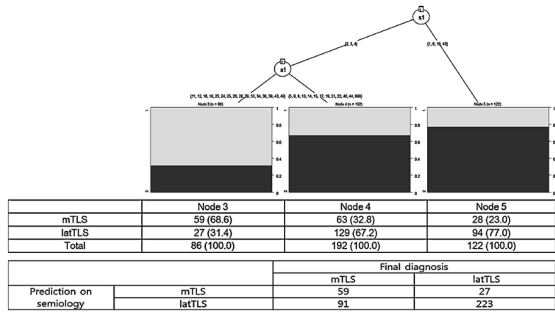
Primary GTCS



34



Differentiation b/w MTLE and LTLE



Localization by seizure semiology. Kim DW et al., 2015

36

Network Disorder - Commissural and Association Fibers -

