EPILEPSY

CHALLENGES IN EVERYDAY PRACTICE:

From first seizure to long-term care

Ad- din Medical College Hospital

Magbazar

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Dr Md Enayet Hussain

MD (Neurology), FCPS (Medicine), MBBS (DMC)

Fellowship in Epilepsy & EEG (UMMC, Malaysia)

Post-fellowship training in Epilepsy & EEG (Japan)

Associate Professor, Neurology

NINS

Case vignette

- A 19-year-old student has been brought to the emergency department with the complaints of sudden loss of consciousness with jerky movement of the limbs for around 1 minute early in the morning today. This is her first attack.
- The family members were frightened watching the event.
- The patient and parents asked several question ?

  Is it epilpesy ?

  Is it curable ?

  Does she need to take medicine ?

  If yes, how long ?

Outline:

- **Definition:** Seizure- provoked, unprovoked, true/ pseudo,
  Epilepsy
  Convulsion
- **Epidemiology:** World and Bangladesh
- **Challenges** in developing countries:
  Myths, superstition,
  Diagnostic
  Management

DEFINITION

SEIZURE

EPILEPSY

CONVULSION

- Sudden
- Uncontrolled
- Paroxysmal
- Hypersynchronous
- Burst of electrical activity

Disturbance of brain function

- impairment or loss of consciousness,
- abnormal motor activity,
- behavioral abnormalities,
- sensory disturbance or
- autonomic dysfunction.

SEIZURE

EPILEPSY

CONVULSION

Provoked seziure/ Acute symptomatic seizure

- Acute neurologic event (stroke, head injury)
- Acute metabolic disturbance (hyponatremia, hypo-, hyperglycemia)
- Encephalitis

Unprovoked seizure

- Idiopathic seizure
- Seizures attributed to past H/O stroke, brain injury

SEIZURE

EPILEPSY

CONVULSION

Tendency to have recurrent **UNPROVOKED** seizure

Unprovoked seizure

- Idiopathic seizure
- Seizures attributed to past H/O stroke, brain injury

SEIZURE

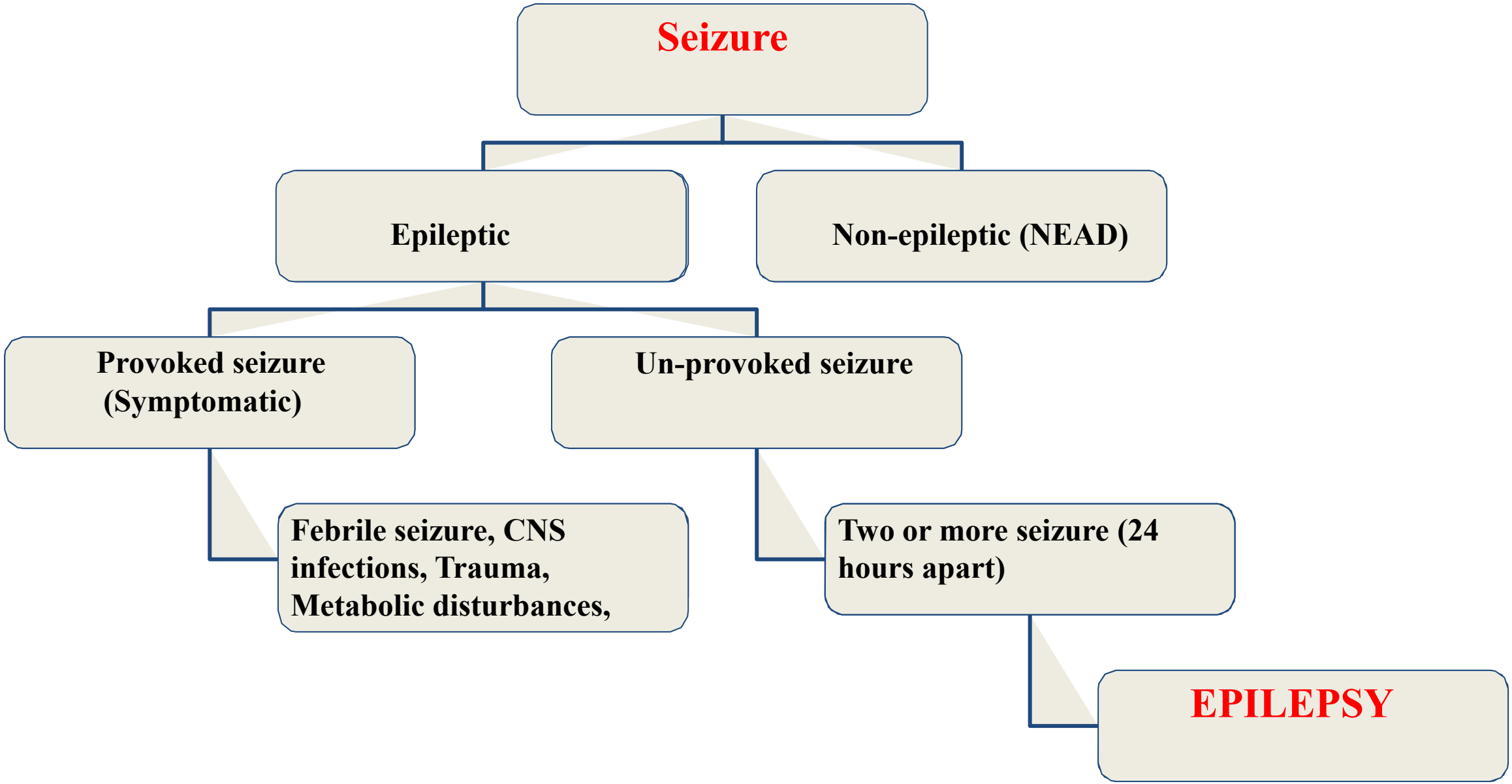
EPILEPSY

CONVULSION

Motor part of a seziure

Pseudo vs True seizure

Attack feature	Psychogenic seizure/ Pseudo seizure	Epileptic seizure/ True seizure
Stereotype of attack	May be variable	Usually stereotypical
Duration	Usually **prolonged**	Usually **brief** unless in status
Awake/ sleep	Always awake	Awake &/ **sleep**
Injury	Rare	Can occur with tonic-clonic seizures
Eyes during ictus	**Closed**	**Open (eyes generally remain open)**
Tongue biting	Rare- **tip**	Can occur with tonic-cl **lateral aspect** of the to
Urinary incontinence	Rare	Common
Relation to medication changes	Unrelated	Usually related
Triggers	Emotional disturbances	No
Ictal EEG	Normal	Abnormal
Interictal EEG	Normal	May be abnormal
Postictal Prolactin	Normal	Elevated


Seizure
Epileptic
Non-epileptic (NEAD)
Provoked seizure (Symptomatic)
Un-provoked seizure
Febrile seizure, CNS infections, Trauma, Metabolic disturbances,
Two or more seizure (24 hours apart)
EPILEPSY

EPIDEMIOLOGY

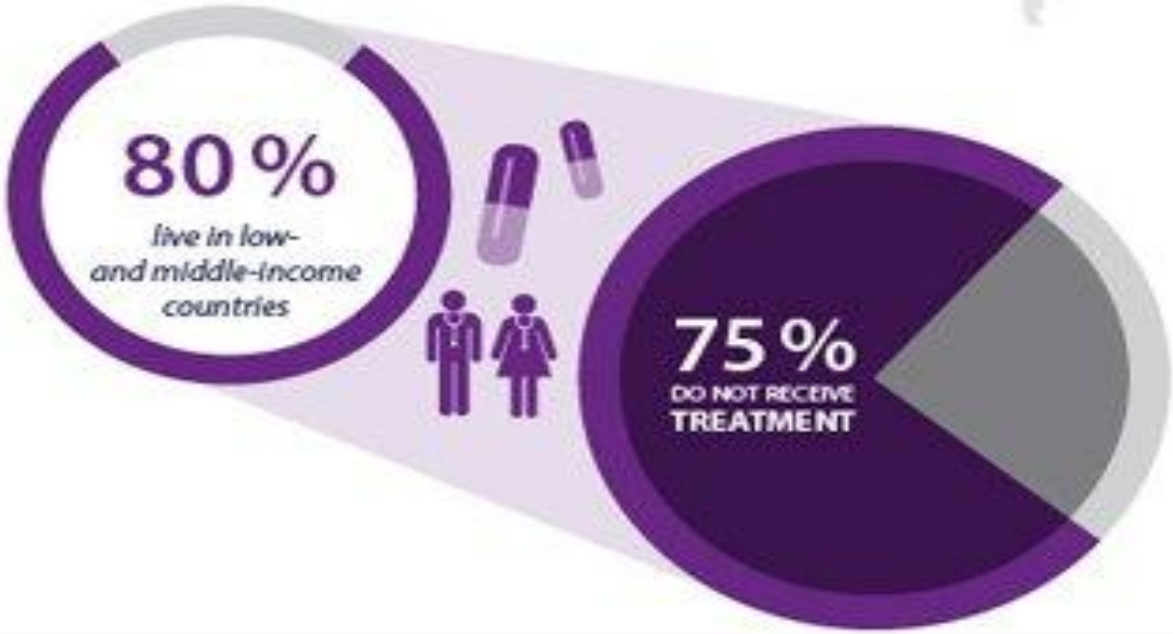
What is the IMPACT of epilepsy?

50 000 000

More than 50 million people are living with epilepsy globally

3-6 TIMES

GREATER RISK OF PREMATURE DEATH



CAUSES OF TREATMENT GAP:

- *lack of trained staff*
- *poor access to anti-epileptic medicines*
- *societal misconceptions*
- *poverty*
- *low prioritization for the treatment of epilepsy*

Scenario in Bangladesh

Received: 22 May 2020 | Revised: 3 July 2020 | Accepted: 10 August 2020
DOI: 10.1002/epi4.12430

FULL-LENGTH ORIGINAL RESEARCH

Epilepsia Open® Open Access

Prevalence of epilepsy in Bangladesh: Results from a national household survey

Quazi Deen Mohammad[1] | Narayan Chandra Saha[2] | Md Badrul Alam[3] | Seikh Azimul Hoque[4] | Ariful Islam[4] | Rajib Nayan Chowdhury[5] | Mohammad Enayet Hussain[5] | Yamin Shahriar Chowdhury[4] | Sakhawat Hossain[6] | Mahmood Ahmed Chowdhury[7] | Matiur Rahman[8] | Bikash Kumar Majumder[9] | Abdus Salam[10] | Amitabh Sarker[11] | Md Kafil Uddin[12,1] | Mohammad Moniruzzaman[13] | Ferdous Hakim[14] | Rijwan Bhuiyan[14] | Nazneen Anwar[15] | Mohammad Mostafa Zaman[16]

Results: The national prevalence of epilepsy per 1000 was 8.4 (95% CI 5.6-11.1), urban 8.0 (4.6-11.4), and rural 8.5 (5.60-11.5). The prevalence in adult males and females was 9.2 (5.7-12.6) and 7.7 (3.6-11.7), respectively. The prevalence in children aged <18 years (8.2, 3.4-13.0 was similar to adults (8.5 (5.4-11.4). Among all epilepsy cases, 65.1% had active epilepsy. Their (active epilepsy) prevalence was 5.8 (3.5-8.1). Of them, 63.4% were not receiving treatment. Moreover, those who received allopathy treatment, 72.5% had low adherence leading to a high treatment gap.

CHALLENGES

MISUNDERSTANDING

DISCRIMINATION

MISCONCEPTIONS

SUPERSTITION

STIGMA

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TABLE 5 Epilepsy treatment situation[a] according to age, sex, and residence

Treatment situation for active epilepsy	All	Sex		Age group		Residence	
		Male	Female	Child[b]	Adult	Rural	Urban
Treatment gap (n = 56)							
a. Appropriate antiepileptic drug treatment	4.7	10.0	0.0	8.7	2.0	3.0	11.2
b. Inappropriate antiepileptic drug treatment	31.9	42.6	22.7	28.1	34.6	32.5	29.8
c. Received no treatment	63.4	47.5	77.3	63.2	63.5	64.5	59.0
d. Treatment gap (b + c)	95.3	90	100	91.3	98	97.1	88.8
Treatment pattern sources[c] (n = 40)							
a. Allopathy	78.3	72.9	72.9	100.0	67.8	75.6	89.8
b. Homeopathy	1.5	0.0	4.4	0.0	2.3	1.9	0.0
c. Traditional *kobiraji*	20.2	18.8	22.7	0.0	29.9	22.5	8.2
Adherence to treatment[d] (n = 33)							
a. High Adherence (score = 0)	8.0	8.3	7.6	1.1	13.0	9.1	4.2
b. Medium Adherence (score = 1-2)	19.5	21.4	15.5	28.4	13.1	18.6	22.4
c. Low Adherence (score = 3-4)	72.5	70.3	76.9	70.5	73.9	72.2	73.4

CHALLENGES IN THE DIAGNOSIS

HISTORY !
HISTORY !!
HISTORY !!!

NO
CONFIRMATORY
TEST

Differentiating seizure from seizure mimics (syncope, conversion disorder/psychogenic seizures, paroxysmal dyskinesias etc.)

Patient

Eyewitness

CHALLENGES RELATED TO INVESTIGATIONS

CHALLENGES RELATED TO INVESTIGATIONS

Problems:

- Lack of facilities
- Failure to comply with standard recording protocol
- Wrong Reports

CHALLENGES RELATED TO INVESTIGATIONS

SENSITIVITY
28-56%

SPECIFICITY
78-98%

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SENSITIVITY
28-56%

SPECIFICITY
78-98%

http://www.banglajol.info/index.php/JNINB

Original Article

Journal of National Institute of Neurosciences Bangladesh, January 2017, Vol. 3, No. 1

ISSN (Online) 2518-6612
ISSN (Print) 2410-8030

Different Types of Epilepsy Based on Clinical and Electroencephalographic (EEG) Findings: Experience at Referral Neuroscience Hospital in Bangladesh

Mohammad Enayet Hussain[1], AFM Al Masum Khan[2], Md Nahidul Islam[3], Md. Ferdous Mian[4], Md. Bakhtiar Azam[5], Rajib Nayan Chowdhury[6]

[Received: 21 January 2016; **Revised:** 6 March 2016; **Accepted:** 11 December 2016; **Published:** 1 January 2017]

Abstract

Background: A good history and a standard EEG recording help establish most of the epilepsy syndromes. **Objective:** The objective of this study was to establish different epilepsy syndromes on the basis of history and EEG in the clinically suspected seizure events. **Methodology:** This cross-sectional study was carried out in the neurophysiology laboratory of National Institute of Neurosciences & Hospital, Dhaka, Bangladesh from January 2013 to December 2015, which included 2549 patients. EEG was obtained through surface scalp electrodes according to international 10/20 system. Patient and their attendants were interviewed using a semi structured questionnaire. The EEG findings, clinical history and in appropriate cases the neuroimaging, CSF and hematological findings were then correlated. **Result:** Among the 2549 patients most were children (39.8% less than 10 years old) and young adult (30.63% in 11 to 20 years age group). Male patients outnumbered female (63% and 36 % respectively). The overall sensitivity of EEG in yielding abnormal interictal epileptiform discharges was 42%. About 32% of total 2549 patients were diagnosed as localization-related epilepsy (LRE), 5% idiopathic generalized epilepsy (IGE), 1.41% was Epileptic encephalopathy. **Conclusion:** In conclusion EEG is helpful in classifying the types of seizure, aids in defining the epilepsy syndrome, predicting the outcome and assists in management of patients. [Journal of National Institute of Neurosciences Bangladesh, 2017;3(1): 3-6]

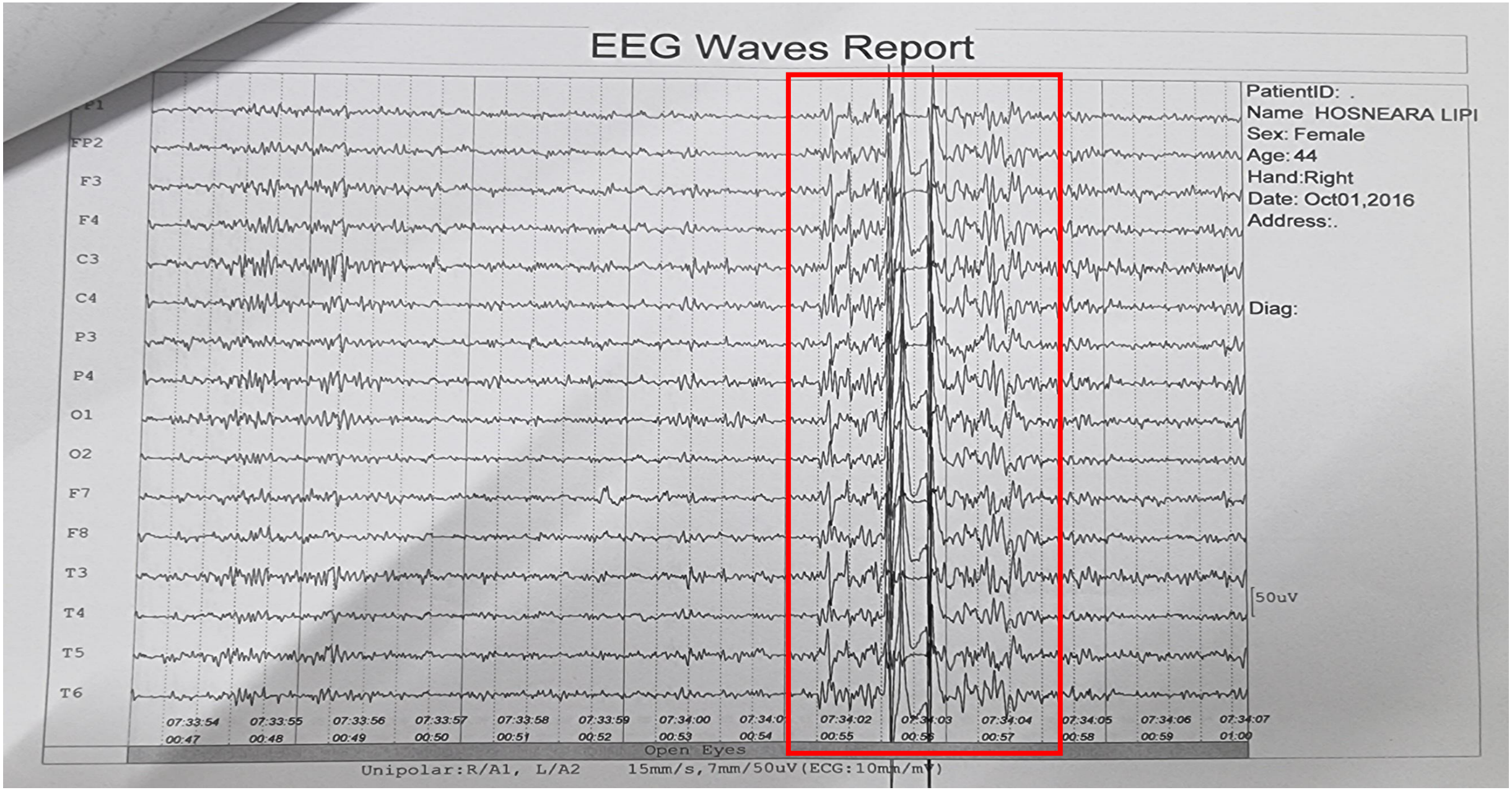
CASE STUDY

- 44 years old female
- Recurrent LOC with stiffening of limbs 4 times - 1 month.

Each episode = 20 min -30 min.

Eyes remain closed.

She can hear others during the event but can’t speak.


EEG Waves Report
PatientID: .
Name HOSNEARA LIPI
Sex: Female
Age: 44
Hand:Right
Date: Oct01,2016
Address:.
Diag:
50uV
FP1
FP2
F3
F4
C3
C4
P3
P4
O1
O2
F7
F8
T3
T4
T5
T6
07:33:54 00:47
07:33:55 00:48
07:33:56 00:49
07:33:57 00:50
07:33:58 00:51
07:33:59 00:52
07:34:00 00:53
07:34:01 00:54
07:34:02 00:55
07:34:03 00:56
07:34:04 00:57
07:34:05 00:58
07:34:06 00:59
07:34:07 01:00
Open Eyes
Unipolar:R/A1, L/A2
15mm/s,7mm/50uV(ECG:10mm/mV)

E.E.G INTERPRETATION

Background rhythm was alpha, bilaterally symmetrical.

several bouts of spike & wave discharges were observed during recording.

=> generalized epileptiform discharges

please correlate clinically.

- The patient was prescribed Levetiracetam, 500 mg 1-0-1.
- No improvement even after Levetiracetam, 2 gram and Valproate 2 gram.
- Later patient was referred to Epilepsy clinic NINS.

Don't treat the report, treat the patient with your knowledge and judgement

NEUROIMAGING

- Not a routine test.
- Indication:
  1. Seizures having focal features clinically
  2. EEG showing focal seizure source
  3. Control of seizures difficult or deteriorating
  4. Seizure onset after the age of 20 years
- EEG & MRI /CT- one cannot replace the other

WHEN TO START ASM

RATIONALE

↓Recurrence

Better well-being

WHEN TO START ASM

EPILEPSY

Epilepsy is a disease of the brain defined by any of the following conditions

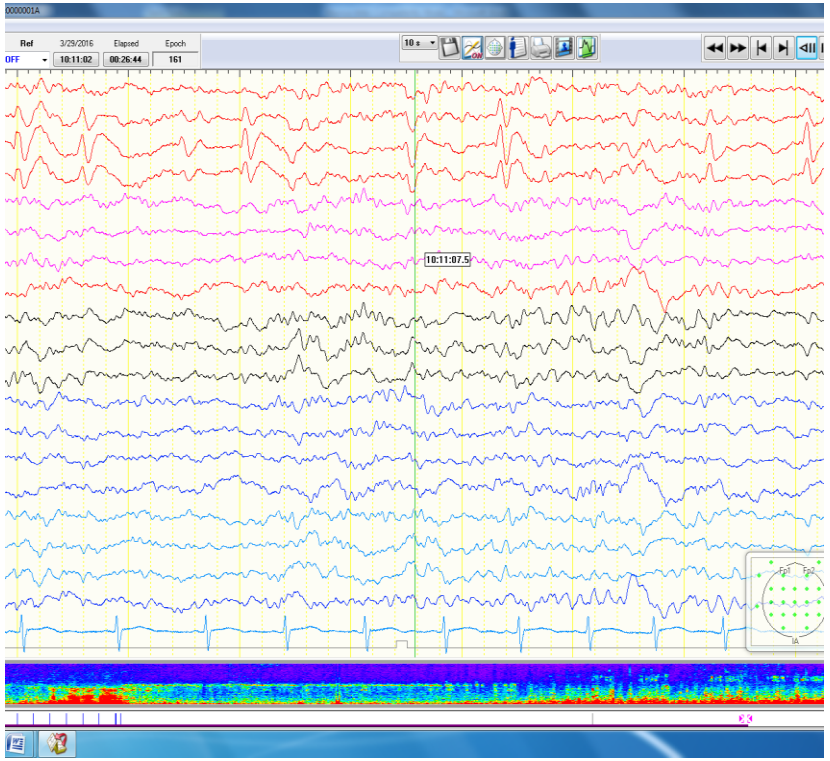
1. A least **two unprovoked (or reflex) seizures** occurring >24 h apart

2. **One unprovoked (or reflex)** seizure 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

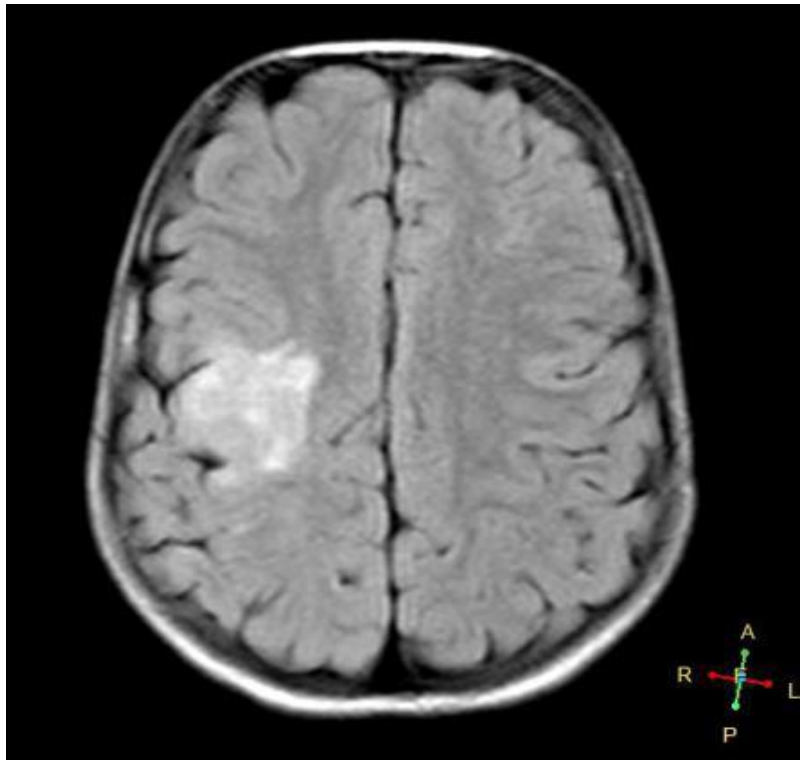
3. Diagnosis of an **epilepsy syndrome**

50 year-old-male presented with an episode of GTCS in the morning. He gave a history of stroke with RHP 2 years back.

16-year-old girl presented one episode of GTCS.



A 16-year-old boy has presented with GTCS. Prior to loss of cosnciousness he felt tingling in the left U/L for few seconds



WHEN TO START ASM

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Predictor	Approx. Recurrence Risk	Comments
Epileptiform discharges on EEG	60–80%	Strongest single predictor
Structural brain lesion on MRI (stroke, tumor, cortical dysplasia, etc.)	60-90%	Especially when lesion is epileptogenic
Prior significant brain insult (traumatic brain injury, CNS infection, stroke)	60-80%	Suggests permanent epileptogenic focus
First seizure occuring during sleep	~60%	Indicates underlying predisposition
Abnormal neurological exam or developmental abnormality	>60%	Reflects structural or functional brain pathology

CHOOSING THE RIGHT AED

No proven algorithm, multiple factors considered

Epilepsy type

Focal vs Generalized
Specific syndrome

1

Patient factor

Age, sex, comorbidities, concurrent medications, pregnancy, financial constraints

2

Medication factor

Adverse effects
Tolerabilty
Availability

3

Choice of medications:

- Type of seizure
- Availability
- Cost
- Side effects
- Drug interactions
- Special situations: Elderly & children, women in child bearing age
- Comorbidities

Seizure type	Drug of choice	Second line
Focal/ 2^{o}**GTCS**	CBZ, OXC, LTG	LEV, VPA, TPM, ZNS, PB, PHT, CLB
1^{o} GTCS	VPA, LVT	LTG, TPM
Absence	VPA, ESM	LTG, CZP
Myoclonic	VPA	LEV, CZP

Given the risks associated with exposure in utero, valproate should be **avoided wherever possible as initial treatment** of epilepsy in girls and women of childbearing potential

SODIUM VALPROATE

15-45 years female

Epilepsia®
Official Journal of the International League Against Epilepsy

Special Report

Valproate in the treatment of epilepsy in girls and women of childbearing potential

Torbjörn Tomson ✉, Anthony Marson, Paul Boon, Maria Paola Canevini, Athanasios Covanis, Eija Gaily, Reetta Kälviäinen, Eugen Trinka

First published: 08 April 2015 | https://doi.org/10.1111/epi.13021 | Citations: 203

WARNING FOR WOMEN AND GIRLS

PRINCIPLES OF ASM THERAPY

Start with one first-line drug, start low-go slow, mimimum number of doses

If seizure persist despite adequate dose and tolerance- **switch to** second first line drug

Failure of 2nd drug- start 2nd line drug
If this combination fails- replace the 2nd line drug with alternative 2nd line
If this combination fails- check adherence, reconsider diagnosis (are events seizure ?/ occult lesion?)

Consider alternative, non-drug treatments e.g. epilepsy surgery, VNS
Use minimum number of drugs in combination at anyone time

Important advice & counseling for Epilepsy patient

- Regular intake of AEDs & duration of treatment.
- Orientation about immediate seizure management.
- Side effects of AEDs.
- Life style modification (Avoidance of precipitating factors if any (e.g- sleeplessness, stress-physical/mental, alcohol or other substance abuse).
- Avoidance of activities which might place the patient themselves or others at risk, e.g. Driving, Swimming, fishing, boating
- Avoid sleeping alone at night (SUDEP.)
- Rash alert must be given with documentation.

Principles of epilepsy management

- Confirm diagnosis of epilepsy.
- Establish seizure type & epilepsy syndrome.
- Evaluate AED treatment needed or not.
- Select appropriate AED based on type & syndrome.
- Start monotherapy with 1st line drug---*"Start low go slow"*
- Titrate up till seizure control / maximum tolerated or pharmacological dose appears.

Activities of Epilepsy wing of Neurophysiology department in NINS & H

- Weekly Epilepsy clinic- Every Sunday (8 AM to 1 PM)
- EEG (routine & prolonged)
- Epilepsy & EEG fellowship programme (6 months- 2 sessions in a year, 2 in each session).
- EEG technician training course (3 months- 1 in each session).

THANK YOU

2nd MONDAY of FEBRUARY

International Epilepsy Day 2026

Turning stories into action