EEG quiz

Colin Lui
TKOH
March 31,07

Case 1

What's the most likely EEGdx

And ddx?

hint

- Symmetrical and synchronous
- Sharpish and in semi periodic manner
- More anterior predominance and showed some lag in A-P montages

answer

Triphasic wave

Distinguish Triphasic from…

- Triphasic wave

1. In trains without intervening activity
2. Less periodic
3. AP phase lag
4. Waveform: blunted, first sharpest, second highest and third longest

- biPLED

1. Recur at faster frequency with background activity in between
2. More “periodic”
3. No phase lag
4. Morphology :more sharp

Case 2

What's the mostly likely EEG dx

answer

PLED

Distinguish from active IED

- PLED

1. Periodic and persists throughout the whole tracing
2. Frequency : 1 transient every 0.5 s to 4 s (av> 2 sec)
3. Amp: 100-300 microV

- IED (Active)

1. Occur sporadically
2. Can range from once every few secs to few mins
3. May have shifting focus

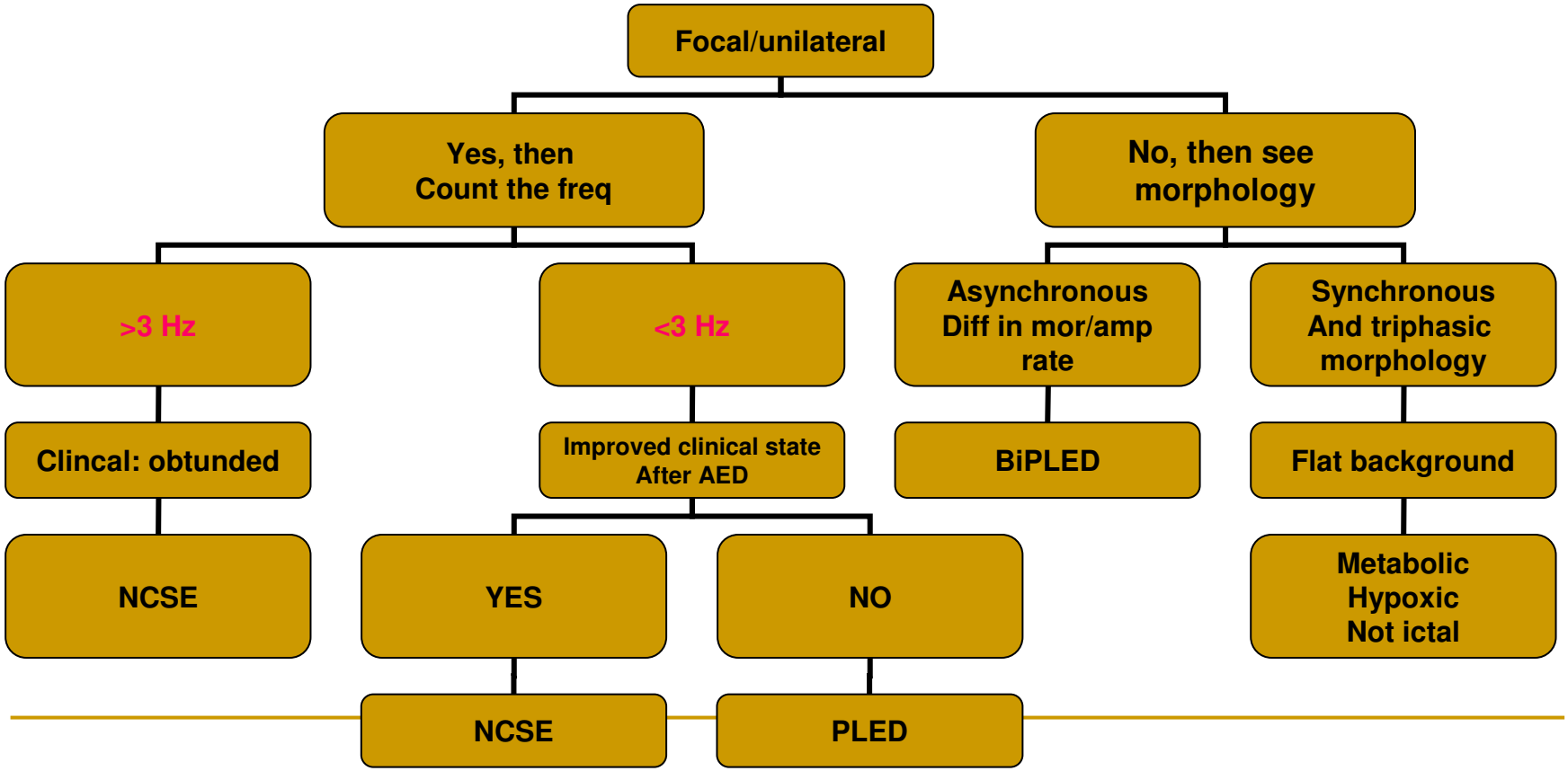
PLED : Why does it matter?

- It implies cortical insult, acute or subacute
- Etiologies specific:
  - Stroke 50% (particularly embolic stroke)
  - Infection 20%(* particularly HSV)
  - Tumor 20%
  - Other 10%
- Increased likelihood for seizure
- And might be one of the stage of status, during when motor seizure should be present

Approach to periodic wave

algorithm

Approach to periodic or "pseudoperiodic" waves



“rhythmic medley”

Case 3

What is the most remarkable EEG finding and can u derive the EEG dx?

hint

- Region/ symmetric?
  - Synchronous *frontal* predominant *delta*
- Rhythmicity?
  - Rhythmic but not evolutionary; come *intermittently*
- Related to drowsiness
  - Yes
- Is it periodic?
  - No intervening activity in between=> It's not periodic
- Is it happening during HV or photic?

FIRDA

Frontal intermittent rhythmic delta activity

Differentials of FIDRA

- Physiological:
  - During drowsiness
  - During HV ; or age <20
- Pathological
  - Not essentially frontal lesions
  - Thalamo-cortical pathway interruption; either midline or diffuse cortical disorder

Case 4

What is the mostly likely EEG dx for following 2 tracings?

Case 4a

Time : 00: 26: 21 and 00: 28: 21

And HV

Case 4b

00: 09: 56

00: 13: 07

00: 15: 37

hint

- Is it rhythmic
- is there any evolutional change?
- Where is the site of such rhythmic activity
- And when does it happen?

Answer : 4 a

Subclinical Rhythmic Electrographic Discharge of Adults (SREDA)

Answer : 4b

Rhythmic temporal bursts of drowsiness

Distinguishing SREDA vs RTBD

- SREDA

1. Adult age group(more in elderly)
2. Alpha to theta
3. Region in occipito-parieto-temporal region
4. Usu asynchronous, can be unilateral
5. > 10sec
6. And occurred during HV

- RTBD

1. Adult age group(more younger)
2. Theta range
3. Region in mid temporal
4. Usu independent on both side
5. < 10 sec
6. In drowsiness

Clinical significance

- Both : non epileptogenic and not ictal
- Normal variant
- dont’ overdiagnose!

RTBD

- RTBD

1. Occur bilaterally independently in both temporal region
2. With shifting from side to side
3. Represent one of the normal variant during drowsiness
4. Occur in aldolesent or young adult

- ictal temporal discharge

1. Occur in the site of ictal zone
2. Evolutional change
3. Morphology: more sharpish

Case 5

Is the wave epileptic or normal variant?

answer

Wicket spike

Differentiating from temporal epileptiform activity

- Wicket spike

1. Older individual ; with slight left temporal predominance
2. In trains or singlet, shift from one side to other
3. Smaller amp. And with no after slow wave
4. Freq: 6-11Hz

- IED

1. Any age
2. Not in trains
3. After slow wave accompanied

Case 6

This guy has single episode of seizure ;What is the EEG abnormality and will you give AED?

EEG: Activation methods: Photic stimulation

- Abnormal
  - Absence of VER is not abnormal unless unilateral
  - Absenceof driving is not considered as abnormal unless markedly asymmetric or unilaterally absent
- Photoconvulsive vs photomyoclonic response

Feature	Photomyoclonic	Photoconvulsive
Spatial distribution	Anterior	Posterior / generalized
Termination	End of stimulus	May stop before the end of the stimulus or outlast the end of stimulus
RISE TIME OF THE SPIKE	FAST(EMG) Spikes	Slower, spike-and-wave complexes most common
Frequency	Same frequency at the flash	Frequency is independent of the flash frequency , usually slower

Differentials of photoconvulsive response

- Provoked epilepsy
  - Photosensitive epilepsy
- Unprovoked epilepsy
  - IGE
  - Occipital epilepsy
  - Rarely, TLE

Treatment of first unprovoked sz

- Patient factor
- Investigation factor
- Seizure factor

Patient factor

- Occupation
- Patient wish (2 yr recurrence : ~30%)
- ? Pregnant woman in late trimester

Investigation factor

- EEG * and neuroimaging
- * ***No. of false negative: reduced to 30% in repeated testing (routine EEG)***
- ***SLEEP EEG: Reduce false negative rate to 20%***

	findings	2year recurrence rate
EEG	Non specific slowing	~40-50%
	Epileptiform	~60%
	3 Hz S&W	~100%
CT brain MRI Brain	Lesion suggestive of Remote brain injury	~ 60-90%

Seizure factor

- Syndrome
  - IGE: ~ 100%
- Focal features
  - Increased risk
- First episode of status epilepticus
- ** but not
  - Cluster of seizure within 24 hrs
  - Second seizure after an interval > 1 year

acknowledgement

- EDU staff of QEH:
  - Cheuk Yuek Yin
  - Chiu Chi Fong
  - Leung Yin Shan
  - Lui Wai Kin
  - Lung Yin Wan
  - Ng Ching Yi Doris
  - Tsui Ho Yin
  - Wong Yat Yin
  - Wong, Kitty

reference

- Recommended reading
  - Fisch & Spehlmann's EEG primer
  - Altas of EEG patterns BY John M. Stern(LWW)
- Other teaching course
  - A course in Improving EEG reading and Interpretation Skills by Asian Epilepsy Academy