

ANZAN EEG Syllabus

1. Technical Basics
 - 1.1. Generators
 - 1.2. Definition - voltage/time/space
 - 1.3. Amplifiers
 - 1.3.1. Differential
 - 1.3.2. Polarity convention
 - 1.3.3. Common mode rejection
 - 1.4. References
 - 1.4.1. Non-cephalic
 - 1.4.2. Common scalp electrode
 - 1.4.3. Average
 - 1.4.4. Source derivation
 - 1.4.5. Balanced neck-chest
 - 1.5. AC recording v DC
 - 1.6. Filters
 - 1.6.1. What they do
 - 1.6.2. Phase shift
 - 1.6.3. High pass (LFF)
 - 1.6.4. Low pass (HFF)
 - 1.6.5. Band pass
 - 1.6.6. Band reject (Notch)
 - 1.6.7. Traps
 - 1.6.7.1. Conversion of EMG to beta or spike
 - 1.6.7.2. Concealment of slowing
 - 1.6.7.3. Concealment of useful artefacts
 - 1.7. Electrodes
 - 1.7.1. 10-20 system
 - 1.7.2. Sphenoidal, nasopharyngeal
 - 1.7.3. Non EEG
 - 1.7.3.1. EOG
 - 1.7.3.2. Surface EMG
 - 1.7.3.3. Movement
 - 1.7.3.4. ECG
 - 1.8. Localisation Principles
 - 1.8.1. Bipolar montage – phase reversal
 - 1.8.2. Common referential montage
2. Normal EEG Adults
 - 2.1. Frequency band definitions
 - 2.2. Posterior background rhythm
 - 2.2.1. Range
 - 2.2.2. Distribution
 - 2.2.3. Reactivity, squeak, paradoxical alpha
 - 2.2.4. Amplitudes and asymmetries
 - 2.2.5. Alpha variants
 - 2.2.6. Elderly
 - 2.2.6.1. Temporal slowing
 - 2.2.6.2. Low voltage EEG
 - 2.2.6.3. Drowsy patterns
 - 2.3. Other posterior transients and rhythms
 - 2.3.1. Lambda
 - 2.3.2. Posterior slow waves of youth
 - 2.3.3. Phi
 - 2.4. Mu
 - 2.4.1. Range, distribution
 - 2.4.2. Asymmetry
 - 2.4.3. Reactivity

- 2.4.4. Morphology
- 2.4.5. Polarity

- 2.5. Beta
 - 2.5.1. Distribution
 - 2.5.2. Frequency,
 - 2.5.3. Amplitude, asymmetry, skull defects
 - 2.5.4. Medication effects
- 2.6. Theta
- 2.7. Hyperventilation
- 2.8. Photic stimulation
 - 2.8.1. Following v spikes
 - 2.8.2. Harmonic patterns
 - 2.8.3. On/Off responses

3. Normal EEG Children

- 3.1. 3 months to 12 years
- 3.2. Posterior background rhythm
 - 3.2.1. 1st appearance, reactivity
 - 3.2.2. Ontogeny,
 - 3.2.3. Posterior slow waves of youth
 - 3.2.4. Other posterior transients
 - 3.2.4.1. Lambda, shut eye waves
 - 3.2.4.2. POSTS
 - 3.2.5. Drowsiness, rhythmic posterior delta
- 3.3. Theta, delta background
 - 3.3.1. What is abnormal? How much is too much?
 - 3.3.2. When should it disappear?
- 3.4. Mu
 - 3.4.1. Central rhythm in children
- 3.5. Beta
 - 3.5.1. Drowsiness
- 3.6. Hyperventilation
 - 3.6.1. Posterior, frontal
 - 3.6.2. How much is enough?
 - 3.6.3. What is excessive slowing?
- 3.7. Photic stimulation
- 3.8. Teenage EEG

4. Normal Drowsiness and Sleep

- 4.1. Adults
 - 4.1.1. Drowsiness
 - 4.1.1.1. Stages of drowsiness
 - 4.1.1.2. Rhythmic temporal theta of drowsiness
 - 4.1.2. V waves, Spindles, K complexes, POSTS (vs spikes)
 - 4.1.3. Sleep stages
 - 4.1.4. Arousals
- 4.2. Children (excluding neonates)
 - 4.2.1. Hypnagogic hypersynchrony
 - 4.2.2. Frontal theta, posterior delta
 - 4.2.3. Ontogeny of sleep transients in children
 - 4.2.3.1. Asymmetry
 - 4.2.4. V waves, Spindles, K complexes, POSTS
 - 4.2.5. Sleep stages
 - 4.2.6. Arousals

5. Normal Variants

- 5.1. Alpha variants
 - 5.1.1. Slow

- 5.1.2.Fast
 - 5.2. Skull defects
 - 5.2.1.Beta
 - 5.2.2.Breech
 - 5.2.3.Amplitude asymmetry
 - 5.2.4.Sharp transients
 - 5.3. 14 and 6 per sec positive spikes
 - 5.4. BETS
 - 5.5. Psychomotor variant
 - 5.6. 6 Hz spike-wave
 - 5.7. Wicket spikes
 - 5.8. SREDA
 - 5.9. Midline theta
6. Localisation, Artefacts, Asymmetries
- 6.1. Digital EEG
 - 6.1.1.Contrasts with paper
 - 6.1.2.Montage reformatting
 - 6.2. Montages
 - 6.2.1.Standard montages
 - 6.2.2.Custom montages
 - 6.3. Artefacts
 - 6.3.1.Pulse
 - 6.3.2.Electrode
 - 6.3.3.Eyes
 - 6.3.3.1. Eye blink
 - 6.3.3.2. SEMs
 - 6.3.3.3. Nystagmus
 - 6.3.3.4. Eyelid flutter
 - 6.3.4.ECG
 - 6.3.5.Respiratory
 - 6.3.6.Glossokinetic
 - 6.3.7.Movement
 - 6.3.8.50Hz
 - 6.3.9.EMG
 - 6.3.10. Lateral rectus spikes
 - 6.4. Amplitude asymmetries of background rhythms
 - 6.4.1.Awake
 - 6.4.2.Asleep
7. Non-epileptiform abnormal patterns
- 7.1. Intermittent slow wave activity
 - 7.1.1.Focal
 - 7.1.2.Diffuse
 - 7.2. Intermittent rhythmic slow wave activity
 - 7.2.1.FIRDA
 - 7.2.2.OIRDA
 - 7.2.3.TIRDA
 - 7.3. Continuous slow wave activity
 - 7.3.1.Polymorphic delta activity
 - 7.3.2.Focal
 - 7.3.3.Generalised
 - 7.4. Periodic patterns
 - 7.4.1.SSPE
 - 7.4.2.JCD
 - 7.4.3.Triphasic waves
 - 7.4.4.Burst suppression
 - 7.4.5.Generalised periodic patterns
 - 7.5. Coma patterns

- 7.5.1. Alpha
- 7.5.2. Theta
- 7.5.3. Beta
- 7.5.4. Spindle
- 7.5.5. Burst suppression

8. Generalised epileptiform patterns

- 8.1. Generalised spike and wave
 - 8.1.1. Distribution
 - 8.1.2. Morphology
 - 8.1.3. Asymmetry, focal spikes
- 8.2. 3Hz spike and wave
 - 8.2.1. Effect of sleep
 - 8.2.2. Posterior rhythmic delta
- 8.3. Slow spike and wave
- 8.4. Polyspike and wave, JME
- 8.5. Secondary bilateral synchrony
- 8.6. Generalised paroxysmal fast activity
- 8.7. Photosensitivity
 - 8.7.1. Clinical significance
 - 8.7.2. Photoelectric artefact
 - 8.7.3. Photomyogenic (photomyoclonic) response

9. Focal epileptiform patterns

- 9.1. Definition of sharp waves and spikes
- 9.2. Occipital
- 9.3. Centrotemporal
- 9.4. Midline
- 9.5. Temporal
- 9.6. Multifocal spikes
- 9.7. PLEDS, BIPLEDS
- 9.8. Traps in the interpretation of spikes and sharp waves

10. How to read and report an EEG

- 10.1. Reading EEG
 - 10.1.1. It is only a sample
 - 10.1.2. Vary montages, sensitivity, filters
 - 10.1.3. Re-display abnormalities
 - 10.1.4. Consider alternative explanations for unexpected abnormalities
 - 10.1.4.1. Normal variants
 - 10.1.4.2. Unusual normal transient
 - 10.1.4.3. Fragment of a normal rhythm
 - 10.1.4.4. Artefacts
- 10.2. Clinical correlation
 - 10.2.1. Sensitivity
 - 10.2.1.1. Sleep deprivation/sedation
 - 10.2.2. Specificity
- 10.3. Reporting EEG
 - 10.3.1. Structure of the report
 - 10.3.2. What to include
 - 10.3.3. What not to say
- 10.4. Optimal clinical use of the EEG
 - 10.4.1. Initial diagnosis of epilepsy
 - 10.4.2. Follow up of epilepsy
 - 10.4.3. Psychiatric symptoms
 - 10.4.4. Acute confusion
 - 10.4.5. Dementia
 - 10.4.6. Coma
 - 10.4.7. Pseudoseizure