The Diagnostic Utility of the Video EEG at a Tertiary Care Center of North India: A Retrospective Study

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Introduction

- Video-electroencephalographic (VEEG) recording is one of the important diagnostic tool in Neurology practise for epilepsy diagnosis and management
- Short-term VEEG recording is economical and cost-effective since it does not require hospital admission and can reduce the cost of overnight EEG recording

Objectives

- To study the role of short-term VEEG in detecting the nature of abnormal events and to find out the utility of VEEG in confirming or classifying the referring diagnosis.

Material & Methods

- The study design was retrospective and hospital based which included analysis of 30 minutes of video EEG recording done between Jan 2021 to Jan 2022 at a tertiary care centre of North India
- The EEG of children in the age group of 1- 10 years, were included. If the duration of artefact free recording was less than 30 minutes, then the EEG was excluded from the analysis.
- Data of all 100 consecutive patients referred for VEEG between Jan 2021 to Jan 2022 were noted in excel sheet and analysed on predefined variables.
- The age, gender, clinical diagnosis, number of antiseizure medicines (ASMs), activation procedures used, and EEG abnormality along with demographic and clinical data were recorded.
- Activation procedures were done as relevant. Children were sleep deprived for all sleep records. Photic was done for all (sleep as well as awake). Eye open, eye closure was performed by cooperative children and passive eye closure was done for young children by covering their eyes by the technician. Hyperventilation was performed along with awake records in children above 5 years of age.
- All EEG were done on Nicolet one(Model no Nicolet one V32 amplifier), Natus Neurology USA. A sixteen channel EEG recording was performed, using 10-20 International System of electrode placement with bipolar and referential montages.

Results

- During the study period, 140 EEGs were captured.
- Finally, 100 EEGs were analysed as part of this retrospective study.

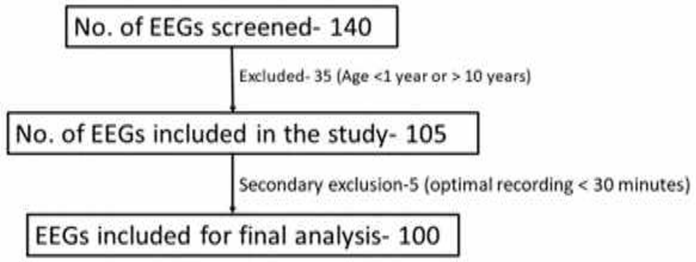

Table 1 :Variable	n =100
Mean Age(years) ±SD	5.4±2.1
Gender Male	33(66%)
Reasons for EEG referral	
First episode of unprovoked seizure	4%
Epileptic encephalopathy	8%
Other epilepsy	60%
Neurodevelopmental disorders (ASD, ADHD)	12%
Autoimmune neurological disorders	4%
Paroxysmal non epileptic events	4%
Others	8%

Table no 2: EEG Characteristics

Parameters	Sleep*	Sleep and Awake*	P- value
No. of EEG records(n=100)	66/100	34/100	
Abnormal EEG (n=58)	35/66 (53%)	23/34 (67.6%)	0.117
EEG with focal IED(n=29)	16	13	0.357
EEG with generalised IED(n=29)	19	10	

*Activation procedures were done as relevant. Children were sleep deprived for all sleep records. Photic was done for all (sleep as well as awake). Eye open, eye closure was performed by cooperative children and passive eye closure was done for young children by covering their eyes by the technician. Hyperventilation was performed along with awake records in children above 5 years of age.

Table 3. EEG characteristics and anti-seizure medication (ASM) profile

No. of ASMs	0	1	2	3	4	p value
Number of children	16	19	52	10	3	
Abnormal EEG	2 (12.5%)	11 (57.8%)	32 (61.5%)	10 (100%)	3 (100%)	P< 0.0001
Focal/ Generalised IEDs	1/1	6/5	17/15	4/6	1/2	P< 0.0001

IEDs: Interictal discharges

Discussion/Conclusions

- Our study emphasises on the role of short-term VEEG in the identification of nature of abnormal electrical/electro-clinical events and also assesses the utility of VEEG in confirmation/classification of the referring diagnosis.
- The yield of EEG abnormalities was higher in children in whom both sleep and awake VEEG was obtained as compared to those with only sleep EEG, though the difference was not significant statistically. Another observation made was that children who were on 2 or more ASMs had higher incidence of abnormal discharges on the VEEG
- Better selection of patients for routine EEG, through clinical history and comorbidities, is warranted to increase its yield.

References

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