A COMPARATIVE STUDY OF VISUAL EVOKED POTENTIALS BETWEEN CHILDHOOD EPILEPSY WITH OCCIPITAL PAROXYSMS AND SYMPTOMATIC OCCIPITAL EPILEPSY

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Visual Evoked Potential

*Visual Evoked Potentials are electrical potentials used to assess the functional integrity of the visual pathway

*VEPs may also have a role in helping us understand the underlying functional dysfunction in epilepsies.

*Anti-Seizure medications also reported to cause dysfunction in VEP by prolonging the latency, with the duration and the dose of these medications playing a role

*Children with developmental delay and poor cognition may also have prolonged latencies in VEP compared to their peers with normal developmental outcome

Occipital Epilepsy

*Can either be structural in etiology or belong to the self – limiting epilepsy syndromes which include SeLEAS, POLE and COVE

*Structural epilepsies in Indian setting could be higher due to the increased prevalence of hypoglycaemic brain injury and hypoxic injury

* Symptomatic Epilepsy portends poorer prognosis compared to self-limiting epilepsy groups.

OBJECTIVES

*To do a comparative study of visual evoked potentials between childhood epilepsy with occipital paroxysms and symptomatic occipital epilepsy

*To ascertain the factors that determine abnormal latency and amplitude in children with symptomatic occipital epilepsy and childhood epilepsy with occipital paroxysms

* To study the electroclinical features of occipital lobe epilepsy

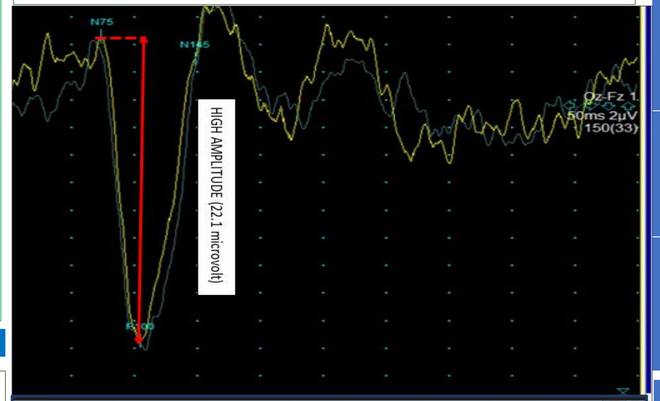
MATERIALS AND METHODS

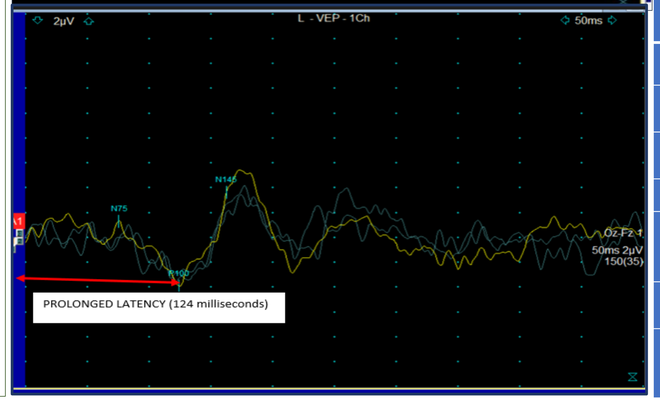
Study design: Cross sectional study from August 2021-March 2023

Study population: Children above the age of 4 years with history of at least one seizure with their most recent EEG showing occipital or occipital predominant spikes.

Study tools: Semi structured pre tested questionnaire, VEP machine and Nicolet EEG machine

Statistical analysis:Data analysed using SPSS -27 statistical software





RESULTS

Variable	Group	N	Mean	Std. Deviation	p value
Mean amplitude	SOE	50	9.02	6.23	<0.001
	CEOP	70	14.77	7.07	
Mean Latency	SOE	50	124.81	30.83	0.003
	CEOP	70	108.53	26.88	

Group	Variable	Number	Mean amplitude ±Std Deviation	p value
SOE	Developmental delay	32	6.76 ±5.01	0.001
	No developmental delay	18	13.04±6.26	
CEOP	Developmental delay	12	14.23 ±9.28	0.770
	No developmental delay	58	14.89 ±6.62	
SOE	Carbamazepine Monotherapy	6	15.13±6.70	0.009
	Not on Carbamazepine monotherapy	44	8.19±5.75	

EEG Findings	CEOP n (%)	SYMPTOMATIC n (%)	Whole cohort n (%)	p value
Activation in sleep	55(78.6%)	46(92%)	101(84.2%)	0.047
Focal Slowing in occipital region	12(17.1%)	27(54%)	39(32.5%)	<0.001
Photoparoxysmal response	5(7.1%)	1(2.1%)	6(5%)	0.399
Clustering of spikes	5(7.1%)	6(12%)	11(9.2%)	0.523
Generalised spikes with occipital discharges	4(5.7%)	3(6%)	7(5.8%)	1
Additional centro-temporal spikes	10(14.3%)	4(8%)	14(11.7%)	0.290
Additional frontal spikes	4(5.7%)	0(0)	4(3.3%)	0.140

Symptoms	CEOP n (%)	SYMPTOMATIC n (%)	Whole cohort n (%)	p value
Vomiting	49(70%)	27(54%)	76(63.3%)	0.073
Pallor/cyanosis	25(35.7%)	22(44%)	47(39.2%)	0.359
Incontinence	21(30%)	19(38%)	40(33.3%)	0.359
Hypersalivation	22(31.4%)	24(48%)	46(38.3%)	0.066
Headache before seizure onset	23(32.9%)	15(30%)	38(31.7%)	0.740
Headache after seizure onset	19(27.1%)	13(26%)	23(26.7%)	0.889
Deviation of eyes to one side	36(51.4%)	22(44%)	58(48.3%)	0.422
Eyelid flutter	12(17.1%)	11(22%)	23(19.2%)	0.505
Nystagmoid eye movements	11(15.7%)	11(22%)	22(18.3%)	0.380
Ictal cough	10(14.3%)	11(22%)	21(17.5%)	0.273
Sweating	22(31.4%)	19(38%)	41(34.2%)	0.454
Lacrimation	19(27.1%)	11(22%)	30(25%)	0.521
Visual Hallucinations	16(22.9%)	7(14%)	23(19.2%)	0.224

CONCULSIONS

*VEP may be used as an ancillary tool to classify occipital epilepsy

*High VEP amplitude in CEOP group possibly represents cortical hyperexcitability and should serve as a substrate for further studies in these children

*As children on polytherapy have low amplitude VEP, it would be prudent to maintain these children on monotherapy or minimum number of drugs.

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