

EEG (Electroencephalography) abnormality in Patients with Benign Paroxysmal Positional Vertigo (BPPV)

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Abstract

Study Objectives:For exploration the relations amongst EEG abnormalities and severity of (BPPV) benign paroxysmal positional vertigo.**Methods:**This our study was showed by means of the examination and evaluation our patient in Maysan city in the south of Iraq from 2018 to 2020, the patients were collected either from ENT or neurology consultation clinics in Alsader teaching hospital ; and also others collected from private clinic of neuromedicine. The main consequence was the incidence of (BPPV). One hundred fifty tow patients suffered from attack of severe symptoms BPPV were sent for EEG exam and observe the EEG abnormality and asses the severity of BPPV associated with EEG evidences. EEG was done for all patients group by bipolar montage and record any spikes or waves abnormalities in temporal or parietal lobe and especially temporal lobe because the auditory area in brain found in temporal lobe and vertiginous area found in tempro-parietal area. Also another 88 patients with mild symptoms of BPPV were sent for EEG and observe whether EEG normal or abnormal. **Results:**EEG abnormality meaningfully augmented the severity of BPPV. **Conclusions:**We prove that EEG abnormalities are related with an increased severity of BPPV.

Introduction

The BPPV (Benign paroxysmal positional vertigo) is the greatest communal reason of the vertigo & is considered by feeling a rotating feeling for times from a little seconds to (1)minute;; and these incidents are usually activated by a sudden alteration in cranium head location with veneration to the gravity.⁽¹⁾ These disorders frequently happen in women amongst fifty and sixty years old. About the occurrence of this disorder is amongst approximately 11 and 63 per 100,000 population; with a lifespan prevalence of 2.5%.^{1,2} About the pathophysiology and appliance fundamental (BPPV) includes extricated (otoconia) from the (utricle) macula which arrive the (semicircular canals). Once single or extra (semicircular canals) are improperly enthused by the (otoconia) affecting inside the (semicircular canals) upon a alteration in head locus; incidents of (vertigo) are persuaded.¹ there are another theories explanation pathophysiological process of (BPPV) is (cupulolithiasis).³ The remission spontaneously happens in more or less circumstances;; conversely,, the yearly degree of reappearance is about (15%).^{1,4} Greatest of circumstances can be efficiently preserved with (canalith relocate maneuvers). Beyond the treatment, 7.5% to 23.0% of suitcases quiet demonstration deterioration and relapsing attacks at 1-year continuation and long-standing relapsing may attitude 50.0%.⁵ Etiological cause of (BPPV) in greatest patients is uncertain. About the vestibular warning signs may be correlated to the seizure the situation (i.e., as a representing an aura warning sign), to opposite belongings of ant seizure drugs (AED) treatment, or might be related to a secondary comorbid non-epileptic complaint (e.g., vestibular migraine). Intervallic vestibular signs believed to consequence straight from (focal intermittent epileptic discharges) have been differently recognized as (epileptic vertigo),^{2,8} (vestibular epilepsy),^{3,10} (vestibular seizures),⁴ (vertiginous seizures),^{4,6,7} or (epilepsia tornado).^{7,9} About our study and this article we concentrate about EEG abnormality any abnormal spikes and/or waves in EEG associated with BPPV after proved and diagnosis the cases of pure BPPV.

Aim of the study:

For exploration the relations amongst EEG abnormalities and severity of (BPPV) benign paroxysmal positional vertigo.

Patients and methods:

This our study was showed by means of the examination and evaluation our patient in Misan city in the south of Iraq from 2017 to 2019 , the patients were collected either from ENT or neurology consultation clinics in Alsader teaching hospital ; and also others collected from private clinic of neurology. The main consequence was the incidence of (BPPV).

Ninety three patients suffered from severe attack of BPPV were sent for EEG exam and also 70 patients mild attack of BPPV and observe the EEG abnormality and asses the severity of BPPV associated with EEG evidences.

Inclusive and exclusive criteria:

All cases with pure BPPV were sent for EEG, BPPV diagnosed and proved clinically and investigational approach.

We exclude BPPV that associated seizure or migraine.

Statistical Analysis:

Information organization and arithmetical exploration were achieved by means of (SPSS) software version 22 (SPSS Inc.; Chicago; Illinois; United States).. A two-tailed rate of (P < .05) was measured to specify statistical importance.

Results:

Table 1 BPPV severity and Association with abnormal EEG

Variables	Severe BPPV		Mild BPPV		P value
	No.	Percentage*	No.	Percentage*	
Abnormal EEG	140	92.1 %	12	13.6%	Significant 0.0001
Normal EEG	12	7.9%	76	86.4%	

About sever BPPV associated with abnormal EEG 140 (92.1%) and only severe BPPV only 6 (7.1%) associated with normal EEG.

In the other hand the mild BPPV only 12(13.6%) associated with abnormal EEG but the majority 76(86.4%) normal EEG.

Table 2 sensitivity, specificity, positive and negative predictive value of abnormal EEG that associated with severe BPPV

Abnormal EEG associated with severe BPPV	Sensitivity	specificity	PPV	NPV
	92.%	86.4%	92%	90%

DISCUSSION:

Our revision advises 2 supplementary outcomes that are fairly unpredicted:: (1) abnormal EEG producing severe BPPV are abundant extra probable to remain temporal lobe than parietal lobe,, and (2) they remainsimilarlyprobable to initiate in the (right)&(left) hemispheres. These outcomesmight supportdoctors in decisive whether those suffer fromBPPVmust be assessed for EEG and needadditional vestibular valuation.

Nevertheless,; built on the spreading of abnormal EEG sites experiential at this point; indicators and abnormal EEG origin must be sought after in patients suffer from severe BPPV. Conversely, abnormal EEG might be challenging to classify clinically & by typical surface EEG ,11,12 with offensivefootages contribution better-quality three-dimensional resolve and augmented understanding.13,14

Until that time, a(right-hemisphere dominance) for vertigo had remained anticipated,15,16,17 which is a serviceable theory; assumed the right hemisphere chief part in spatial awareness. Our study; nevertheless, no statistically substantial alterations stayed initiate.

Conclusion:

We prove that EEG abnormalities are related with an increased severity of BPPV.

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