

## Research Article

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# Study Visual Functions in Epileptic Patients using Depakote

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### Abstract

Depakote (divalproex sodium) is combined of valproic acid and sodium valproate used to treat bipolar disorders, epilepsy and migraine. Side effects of Depakote include weakness, tremor, drowsiness, diarrhea, vomiting, nausea, changes in menstrual periods. The aim of this study is to find if this drug has side effects on the retina.

**Materials and Methods:** 18 patients suffering from epilepsy with no history of visual complaints were included in the study. They all take Depakote as a medication of treatment epilepsy for at least nine months. Also 18 subjects without such prescription were enrolled as a control group. The VEP and ERG obtained in the two groups were compared to find if taking Depakote can affect the eye after a while.

**Results:** The mean voltage of ERG was  $87.88 \pm 12.08$  and  $88.16 \pm 12.97$   $\mu$ V in case and control groups and the mean latency was  $38.2 \pm 2.86$  and  $37.80 \pm 3.36$  msec in case and control groups ( $P > 0.05$ ) that shows there is no significant difference for ERG parameters in two groups. The mean latency of VEP, P100 peak were 1.9/7.23 and 96/5.37 msec and the mean amplitude were  $8 \pm 2.83$  and  $8 \pm 2.41$   $\mu$ v in case and control groups. The difference between two groups was significant in latency of VEP but no significant difference in amplitude was shown comparison of two groups.

**Conclusions:** By the result of this research, one can conclude that Depakote can affect on retina of eye in patients taking this drug for at least a few months.

**Keywords:** Depakote; Epilepsy; Visual Evoked Potential; Electroretinogram

### 1. Introduction

Epilepsy is one of the most common neurologic disorder worldwide in terms of disability-adjusted life years [1].

Around 50 million people have epilepsy in the world. Nearly, 80% of the people with epilepsy are found in developing regions [2]. Symptoms of epilepsy depend on the type of it and the localization of the epileptogenic focus in the brain. An epileptic event can include motor, sensory auras and loss of consciousness [3, 4]. Depakote is one of the most common drug used to treat epilepsy. Since patients with epilepsy should take medications for a long time to control the seizures, it is important to find the possible complications of antiepileptic drugs in different parts of the body over time. In this study, we checked the effect of Depakote on the retina. Electroretinogram (ERG) and Visual Evoked Potential (VEP) are two methods that show electrophysiological function on retina.

## **2. Methods**

We chose 18 epileptic patients with the history of taking Depakote for at least 9 months. The age was 21-30, ten females and 8 men. 18 subjects without using this drug, were added in the study as a control group which included both sex and the range of the age was the same as case group. All of 36 subjects did not have any visual problems before the study. VEP and ERG obtained in two groups were compared to find if taking Depakote affects on eye after a while.

## **3. Results**

The mean voltage of ERG was  $87.88 \pm 12.08$  and  $88.16 \pm 12.97$   $\mu\text{V}$  in case and control groups and the mean latency of ERG was  $38.2 \pm 2.86$  and  $37.80 \pm 3.36$  msec in case and control groups ( $P > 0.05$ ) that shows there is no significant difference of latency and amplitude in two groups. The mean amplitude of VEP, P100 peak were  $8 \pm 2.83$  and  $8 \pm 2.41$   $\mu\text{V}$  and the mean latency were  $24.9/7.23$  and  $96/5.37$  msec in case and control groups. The difference between two groups was significant in latency of VEP. Although, no significant difference in amplitude was shown comparison of two groups.

## **4. Discussion**

Different researches have been done in this regard to see the effect of anti-epileptic drugs on visual pathway. Farabi Y and colleagues studied on twenty-seven patients using VEP. They found a statistically significant difference between mean latencies in case and control groups which is the same result in our study [5]. Tumay Y and his team reported delay in VEP, P100 peak of the epileptic patients consuming valproic acid in comparison to VEP, P100 peak of the normal population [6]. Naser M, studied on 25 subjects by using ERG in 2014. The result supports this study that valproate does not affect ERG parameters in patients taking this medication [7]. Yuksel A and his colleagues reported normal VEP in epileptic patient treated with sodium valproate, which is unlike the result of our research.[8]

## **5. Conclusion**

Based on this study, it may be concluded that Depakote would have effect on retinal function and periodic evaluation of retina in patients taking this medication for a while is recommended. However, further studies should be done to confirm this finding and try to find drugs with less side effect for treatment of epilepsy.

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