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Research Article

Effect of Valproic Acid on Retina

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Abstract

Anti-epileptic drugs (AEDs) are the main form of treatment for people with epilepsy. Around 70% epileptic patients may have their seizures controlled by taking these medications. Valproic acid is one of the most common drugs using for epileptic patients. This drug has some side effects like nausea, vomiting, bleeding, abdominal cramps, diarrhea, headache. In this research, we want to study on possible side effects of Valproic acid on eye in patients with epilepsy.

Methods and Materials: In this study, we had 28 patients suffering from epilepsy and seizures who take Valproic acid for at least two years. The control group was included of 28 subjects with no history of taking this drug and no visual problem. Electroretinogram (ERG) obtained were compared with both groups to find possible changes.

Results: The mean voltage of ERG was 92.98 ± 12.67 and 92.16 ± 13.47 μV in case and control groups, (P>0.05). The mean latency was 43.2 ± 3.06 and 44.80 ± 4.36 msec in case and control groups, with P>0.05. These findings show that there is no Significant difference in ERG parameters in case and control groups.

Conclusions: By the result of this research, it can be concluded that Valproic acid does not have any side effects on the retina in patients taking this drug.

Keywords: Epilepsy; Visual Pathway; Electroretinogram; Valproic Acid

1. Introduction

Epilepsy is one of the most common neurologic conditions in the world, with an incidence of almost 50 new cases per year per 100,000. About one-third of epileptic patients have refractory seizures that are not controlled by two or more antiepileptic medications [1]. Valproic acid has been an effective antiepileptic drug that is particularly useful for the management of generalized epilepsies [2]. This drug is one of the most common drugs using for the

management of seizures in epileptic patients in the world [3]. In our study, we used Electroretinogram to see if this drug has side effects on the retina. Electroretinogram (ERG) is an electrical potential generated by the retina in response to light and recorded from the corneal surface of the eye. It can be used in different ways to assess retinal function [4].

2. Methods

In this study, two groups were included. 28 patients suffering from epilepsy (without visual problems) taking Valproic Acid for management their seizures for at least 2 years and 28 subjects as a control group without such history were participated. The ERG was taken for all. The results were compared between two groups. We used Statistical Procedures for Social Sciences (SPSS) version 13.0 for data analysis.

3. Results

The mean latency of ERG in case group was 43.2 ± 3.06 and in control group was 44.80 ± 4.36 msec which shows no statistically significant difference (P>0.05). The mean voltage in case group was 92.98 ± 12.67 and 92.16 ± 13.47 μV in the control group (P>0.05).

4. Discussion

Two ERG parameters in our study, mean latency and voltage were similar in both groups. Our study has the same result with Naser M [3] that showed Valproate had no effect on parameters in the ERG. The study by Ozkul, et al. on ERG also showed that this drug did not result in adverse effects in retina [5]. Other research by Sorrie, resulted no side effect on the retina in patients taking Valproate for a long time [6]. Lobefalo research results explained that retinal nerve fiber layer and macular thickness in patients under one-year treatment with this drug had no significant change [7]. These four works support the findings of our study. A research was done by Farabi, et al. concluded that sodium valproate affects the visual pathway of epilepsy patients, which can be proved by visual evoked potential [8]. This is in contradiction with the result of our study. Verrotti and colleagues reported that short treatment duration with valproate can result in retinal dysfunction mainly color vision problems [9] which does not support this study.

5. Conclusion

According to the results of this study, it may be concluded that Valproic acid would have no effect on retinal function and thereby no periodic retinal assessment is recommended in patients taking this medication. However, further studies should be performed to confirm the findings of the present study.

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