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Research Article

Recording of Visual Evoked Potential in Patients with Photophobia

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Abstract

Introduction: Visual Evoked Potential (VEP) is one of the electrophysiological tests which is used to measure the function of the optic nerves. It helps neuro-ophthalmologists and ophthalmologists to diagnose optic nerve atrophy and visual pathway abnormalities such as meningitis, stroke, anoxia, optic neuritis. In this study, we want to see which two routine stimulation techniques in VEP i.e. pattern reversal checker board or flash gives better findings in photophobia patients.

Material and Method: 38 patients suffering from photophobia were selected randomly from 49 photophobia subjects that were diagnosed with this disease in clinic during last 7 months. VEP was tested using pattern reversal checker board and flash stimulations in all subjects.

Result: The result shows delay in latency in case of flash rather than pattern stimulation.

Conclusion: According to the result, we can conclude that pattern reversal checker board is more useful compare to Flash VEP for studying visual pathway changes in photophobia patients.

Keywords: *Photophobia; Pattern Reversal Checker Board; Flash Stimulation Visual Evoked Potential; Latency; Amplitude*

Introduction

Electrophysiological tests are usually recommended by neuro-ophthalmologists and retina specialists to study visual pathway abnormalities and diagnose the related disease. Clinically, visual evoked potential (VEP) and electroretinogram (ERG) are used for mentioned purposes. VEP test is mostly valuable in refraction and optic nerve diseases, color blindness and amblyopia to check the improvement or getting worse of diseases during treatment [1,2]. A study result showed that checkerboard pattern reversal stimuli is most useful pattern of VEP for checking the visual pathway problems [3]. Flash stimuli pattern of VEP is not as common as PVEP, sometimes used for testing infants or patients having poor visual acuity [4]. Photophobia is a condition in which bright lights hurt eyes. It is a common symptom usually associated with several different conditions like conjunctivitis, dry eye syndrome, migraine, corneal abrasion, encephalitis, sclerites and meningitis. In this study, we want to search for suitable stimulus technique in the patient suffering from photophobia.

Materials and Methods

Thirty-eight (30: female; 8: male) patients with photophobia were selected for our study. Two kind of stimulators i.e. Pattern reversal VEP (PRVEP) and flash VEP (FVEP) was tested in all subject to see if there are any differences in VEP results. Latency and amplitude parameters were measured. We added 38 subjects from healthy population as control group in our study. We used SPSS version 13 statistic software in our study. Finally, we compared all VEP results of case and control groups together to find out possible changes.

Results

Based on the results, the different between mean latency of VEP, P100 Peak (PRVEP) in case and control groups are statistically significant ($p < 0.05$). PRVEP and FVEP in group with photophobia were statistically significant. Although, based on the results, the amplitude of VEP was not significant in both groups.

VEP Group	Latency/S.D (msec)	Amplitude/S.D (µV)
Control	92/4.83	3.6/1.12
Case (FVEP)	119/8.31	3.7/1.21
Case (PRVEP)	107/5.48	4.1/1.65

Table

Discussion

Based on the result of this study, pattern reversal checker board stimulation VEP in patients with photophobia shows delay in latency of P100. While using flash type of stimulation of VEP increased this delay in same patients. Delay in latency of VEP, P100 Peak indicates the visual pathway disturbances in these patients. According to result of our study, the delay in PVEP is less than delay in FVEP. A study was done by Boylu E, showed the delay in latency of VEP, P100 Peak in migraineurs which supports the result of our work [5]. Another research was done by Naser M, had the same result about increasing in delay of latency in FVEP compare to PRVEP in 75 patients with migraine [6]. Another research by Spreafico on migraine patients, found lower VEP, P100 latencies in migraineurs compared to control group which is in contradiction with findings in our study [7]. Other study showed no statistical difference in FVEP, P100 Peak parameters in case and control group [8].

Conclusion

From the result of present study, it can be concluded that in connection with abnormalities of visual pathway in patients suffering from photophobia, pattern reversal visual evoked potential should be taken into consideration.

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