

Original Article

Visual Evoked Potential Findings of Sjogren's Syndrome

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Abstract

Background: Sjogren's syndrome is one of the most common autoimmune diseases. These diseases can affect the entire body. Visual system involvement, i.e., dry eye is most common among these Patients. Visual pathway is a part of visual system may be affected in these patients. The aim of present work is to look for probable visual pathway disturbance of Sjogren's syndrome using visual evoked potential.

Material and Methods: Forty eyes (20 Sjogren's female patients) with age in between 45-55 years were chosen for this study. Implicit time and amplitude of VEP, P100 peak was measured in patient group. Same procedure was repeated for 20 healthy subjects with matched age and sex condition.

Results: The mean age of the patient group was 49.6 ± 3.06 and in case of healthy population it was 50.15 ± 3.28 . The difference between two groups was not significant.

In case of visual acuity, the difference between two groups was not statistically significant i.e., both groups had 10/10 BCVA.

The mean values for implicit time were 100.05 ± 3.8 and 99.55 ± 3.54 in patient and healthy groups respectively.

In case of amplitude the values were 5.4 ± 1.44 and 5.2 ± 1.41 in patient and healthy groups respectively. The calculation does not show statistically significant changes between two parameters VEP, P100 peak.

Conclusion: Sjogren's syndrome does not have any adverse effect on visual pathway as far as latency and amplitude of visual evoked potential P100 is concerned.

Keywords: Sjogren's Syndrome; Visual Pathway; Visual Evoked Potential.

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Introduction:

Sjogren syndrome (ss) is a chronic autoimmune disorder of the exo-crine glands with associated lymphocytic infiltrates of affected glands. This diseases attacks tears and salvia glands, and hence dry mouth and eyes ¹.

Its was once believed that Sjogren syndrome is a rare diseases but it is one of the common autoimmune diseases after arthritis rheumatoid. The prevalence of ss diseases is about 1 % with an incidence of 7 per 100,000 in USA ¹. There is different medical specialist, i.e., ophthalmologist oral surgeon, Concern the three is patients.

Visual system affected in these patients. The main eye problem in their patients is fall of tear production and thereby eye irritation ². Along with decreased tear production and subsequent corneal damage these patients may also exhibit some pathological changes in their retina. Jack et al., ³ in 2015 performed a study on retina of nine SS patients (5 male, 4 females; age range 3-23 years). All patients exhibited photophobia and macular crystals. Retinal pigment epithelium (RPE) atrophy was present in 10 of 18 eyes. Also, the full retinal thickness was reduced by 22 %, the inner nuclear layer was reduced by 30 % and the outer nuclear layer was reduced by 40 %. This thinning suggests that there is outer retinal injury in SS, which could be the result of direct toxicity, loss of trophic factors, or altered development. Dysfunction of various sensory pathways may be also present in SS patient ⁴⁻⁷.

Beside retinal disorders, SS patients may suffer from visual pathway disturbances ⁸. Among different diagnostic technique VEP is a proper method to look for visual pathway disturbances ⁹⁻¹¹. Considering the aforesaid review of literature, the author designed

research to survey the probable pathological changes in visual pathway of these patients by visual evoked potential method.

Material and Methods

In a case-control research work, twenty female suffering from Sjogren's syndrome were selected randomly. The diagnosis of diseases was done by a rheumatologist. The patient's visual acuity was normal (BCVA =10/10). The patient's age range was 45-55 years. The pattern reversal visual evoked potential was tested for case group.

Implicit time (m sec) and amplitude (μ v) of VEP, P₀₀ peak was measured for all patients using Mangoni unit capable of recording VEP. Overall three electrodes was used to connect the unit to case group. Active, reference and ground electrode were used in this connection. Active, reference and ground electrodes were attached to occipital, vertex and forehead respectively the same procedure was done for twenty age and sex matched healthy subjects.

The results obtained in case and control groups were compared in case and control groups.

We used mean and standard deviation values to present our data and the Kolmogorov-Smirnov test for the evaluation of normality of data. To describe differences between study groups we used T-test for normal variables and Mann-Whitney for not normal variables.. We performed the statistical analysis using SPSS software version 22 (IBM, Armonk, NY, USA). P values less than 0.05 were considered significant. A web-based sample size calculator analysis the power of study was > 99 % with alpha level 0.05.

This study has been accepted by ethical committee of Tehran Islamic Azad University of Medical Sciences; ethical code: IR.IAU.TMU.REC.1399.267.

Results

According to table 1, there was no statistically significant difference between two groups regarding the age ($P = 0.587$) and visual acuity ($P = 0.156$).

There were no statistically differences between latency and amplitude of VEP. P100 peak in case and control group ($P = 0.794$ and $P = 0.418$ respectively)

Discussion

Sjogren's syndrome affects certain parts of body like eyes and the symptoms is dry eyes. visual pathways also might be affected. Visual evoked potential is a suitable diagnostic technique to survey the visual pathway; there by we plan to look for probable visual pathway pathological changes in Sjogren syndrome patients.

The two groups i.e., control and case were similar as for as demographical aspects were

concerned i.e. age, sex and visual acuity. VEP results in two groups also did not show any significant changes as for as latency and amplitude of VEP, P100 was concerned ($P = 0.794$ and $P = 0.418$ respectively)

The result of present work may be supported by following research work reported by other scientists.

Shushtarian, SMM and his colleagues on 2018 worked on electrophysiological eye examination of a patient with Sjogren's syndrome. The result of their work was normal VEP which was similar to results of present work ¹².

Sekaric et al have reported a 52-year-old woman suffering from SS with normal VEP ¹³ Which support the findings of recent work.

The two references are the case studies. Another work with large number of patients is and old reference done on 1990. They worked on 48 SS patients and they found 12% of their patients have abnormal VEP's ¹⁴.

Table1: Demographic findings in case and control groups

Variable	groups (Mean $\pm$ SD)		P value*
	Control (n=20)	Case (n=20)	
Age	50.15 $\pm$ 3.28	49.6 $\pm$ 3.06	0.587
Visual Acuity (LogMar)	0 $\pm$ 0	0.002 $\pm$ 0.01	0.156

* Independent Samples T Test

Table 2: Measurements of mean latency and amplitude of VEP, P100 peak in the case and control groups

Variable	groups (Mean $\pm$ SD)		P value*
	Control (n=20)	Case (n=20)	
Latency (msec)	99.55 $\pm$ 3.54	100.05 $\pm$ 3.8	0.794
Amplitude (μ v)	5.2 $\pm$ 1.41	5.4 $\pm$ 1.44	0.418

* Based on Mann-Whitney U Test

The results of their work once again support the result of present work because we also had 10% of patients with abnormal VEP's.

The only contradiction with result of present work is reported by, Sharma P and his team on 2009. they introduced an Indian family with two siblings with SS who were found to have abnormal visual evoked potentials ⁷.

Conclusion

This work only assessed and rejected visual pathway problems in the Sjogren's Syndrome patients, other pathological problems need to

be further investigated.

Ethical approval

This study has been accepted by ethical committee of Tehran Islamic Azad University of Medical Sciences; ethical code: IR.IAU.TMU.REC.1399.267.

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Footnotes and Financial Disclosures

Conflict of interest

The authors have no conflict of interest with the subject matter of the present manuscript.