

**BRAINSTEM AUDITORY AND VISUAL EVOKED
POTENTIALS IN NEURO-BEHÇET**
Nöro-Behçet'te beyinsapı işitsel ve vizüel uyarılma potansiyelleri

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Summary: Twelve patients with neuro-Behçet were studied by means of brainstem auditory evoked potentials (BAEPs) and visual evoked potentials (VEPs). The findings were not specific for disease. There were no statistical difference between mean potentials of neuro-Behçet and control groups in either VEPs and BAEPs. As a result, these techniques may be useful for on early diagnosis in neuro-Behçet.

Key Words: Neuro-Behçet; Behçet's disease, Brainstem evoked potentials, Visual evoked potential

Özet: Nöro-Behçetli 12 hastada beyinsapı ve vizüel uyarılma potansiyelleri çalışıldı. Elde edilen bulgular hastalık için spesifik bulunmadı. Nöro-Behçetli hasta grubu ile kontrol grubunda yapılan hem vizüel uyarılma potansiyelleri, hem de beyinsapı uyarılma potansiyellerinin ortalama değerleri arasında istatistiksel bir farklılık yoktu. Sonuçta, bu bulgulara rağmen, bu teknikler nöro-Behçet'in erken teşhisinde faydalı olabilir.

Anahtar Kelimeler: Nöro-Behçet, Behçet hastalığı, Beyinsapı uyarılma potansiyelleri, Vizüel uyarılma potansiyelleri

Behçet's disease (BD), originally is described as a clinical triad of oral and genital aphthosis and relapsing iritis by Hulusi Behçet in 1937 (1). It is now known to have a wide systemic spectrum including arthritis, vasculitis, colitis, thrombophlebitis, cutaneous lesions, large artery aneurysms and encephalopathy (2).

Involvement of central nervous system (CNS) occurs in 5-30 % of cases and it is called neuro-Behçet (2). When neurologic complications are present, the morbidity and mortality rates rise. Because involvement of any portion of neuroaxis may have occurred, there is not a characteristic clinical pattern of disease (2-4). Also cerebrospinal fluid (CSF), electroencephalography (EEG) and computerized tomography (CT) scan findings are nonspecific in BD (3-8).

Early diagnosis and appropriate treatment are es-

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sential to reduce progression of disease (4).

We studied brainstem auditory (BAEP), and visual evoked potentials (VEP) to evaluate the possibility of early diagnosis in neuro-Behçet.

MATERIAL AND METHODS

Twelve patients with neuro-Behçet who were admitted to Erciyes University Medical School Department of Neurology are included to the study. Patients were between 24 and 45 years old (mean 32.0). Eleven cases were male, while one was female. All had BD at least for four years and neuro-Behçet for two years. All the patients have been examined by a neurologist, an ophthalmologist and an otologist. EEG and CT-scans of all patients have been performed. VEPs haven't been performed in four patients. The control group consisted of 12 persons who were volunteered, without any disease, between 22-39 years old (mean 30).

BAEP records have been performed in a quiet room while the patient lies on his/her back. Stimulation of 10 Hz 1000 microsecond as monoaural

click stimuli at 105 dB IPL were given to both ears respectively. A masking sound was applied to the other ear. Two thousand sweeps were averaged for each ear and at least two trials were done. Surface silver disc electrodes have been used and they were placed as the active one to Cz and the reference one to mastoid. In BAEP investigations, I-V, I-III, III-V interpeak latencies have been taken as criteria. If interpeak intervals were more than 3 SD above the mean values of control subjects, it is considered as pathologic (9).

For VEP, a black-white checkerboard pattern on a tv screen reversing on 1 Hz was employed. 80 % contrast was used. Responses were recorded from Oz referred to Fz. Surface silver disc electrodes were used during recordings. At least two trials were done. If P100 values were more than 3 SD above P100 of normal subjects, it is considered as pathologic (9).

BAEPs and VEPs were performed by using DISA Neuromatic 2000 C Instrument.

The student t-test was used for statistical assessment.

RESULTS

BAEP

I-III, III-V, I-V interpeak latencies of patients and control group are given on table I. There were no statistically difference between the mean values of patients and control groups in all latencies. However as seen on table I ($p>0,05$), there were increase of interpeak latencies in some patients. BAEPs of case 1 are seen on figure 1.

VEP

Mean P100 potentials of patients and control group are given on table II. Although mean P100 potential of the patient group did not exceed 3 SD of mean P100 potential of control group, numerous of cases had been P100 potentials which are significantly increased than those of controls. ($p>0,05$) VEPs of case 4 are seen on figure 2.

EEGs and CT scans of cases were usually normal or showed nonspecific changes.

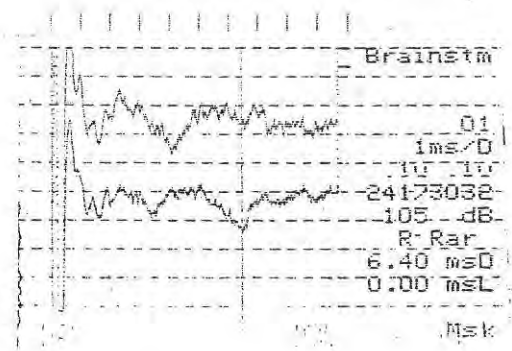


Figure 1. BAEP records of case 1

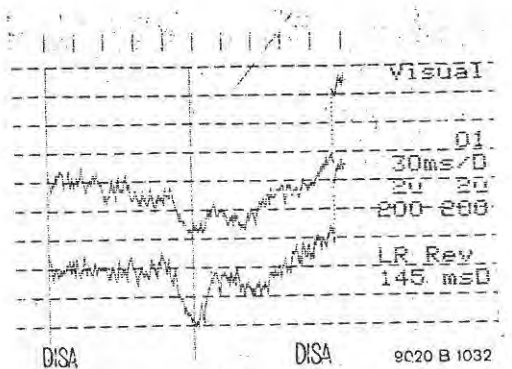


Figure 2. VEP records of case 4

Table I. BAEP data in neuro-behçet patients

Parameters	n	Groups		t	p	
		Cases X ± Sx	n			Controls X ± Sx
Right I-III	12	1.93 ± 0.07	12	1.92 ± 0.45	0.07	p>0.05
Right III-V	12	2.02 ± 0.15	12	1.80 ± 0.34	1.17	p>0.05
Right I-V	12	4.06 ± 0.13	12	3.91 ± 0.23	1.01	p>0.05
Left I-III	12	1.9 ± 0.01	12	2.12 ± 0.17	1.96	p>0.05
Left III-V	12	2.06 ± 0.19	12	1.76 ± 0.23	1.53	p>0.05
Left I-V	12	3.97 ± 0.16	12	3.84 ± 0.21	0.77	p>0.05

Table II. VEP data in neuro-behçet patients

Parameters	n	Groups		t	p	
		Cases X ± Sx	n			Controls X ± Sx
Right P ₁₀₀	8	110.80 ± 4.42	8	98.40 ± 5.47	0.74	p>0.05
Left P ₁₀₀	8	107.25 ± 5.27	8	99.7 ± 6.65	0.29	p>0.05

DISCUSSION

Neurological complications of BD were first reported by Knapp in 1941. The incidence of CNS involvement in BD is estimated between 10-25 % in western countries (10,11). In Japan, the incidence is reported as 7.7 % (12).

In neuro-Behçet, any portion of the CNS may be affected. Corticospinal tract disease, cerebellar ataxia, pseudobulbar palsy, transient ocular palsies, pseudotumor cerebri, cranial nerve palsies may be seen during the process of disease (2-7,10,12,13). Peripheral nervous system involvement in BD was also reported (14).

In some cases, manifestation of neurologic findings in BD antedate the typical mucocutaneous and ocular manifestations. In this situation, early diagnosis and effective therapy carries special importance (2-7,10,12).

BAEPs and VEPs are extensively used physiological investigation methods for assessment of auditory brain stem pathways and visual pathways through occipital cortex, respectively. In recent years, these methods are also studied in Behçet's disease, but in a few number (4,6,15-17).

In BAEP studies, a markable pathology has not been shown previously in BD (18). Our findings show that, some cases have pathological potentials although they do not have any problem with ear and external auditory system. There were not any findings suggesting brainstem involvement in the neurological examinations of those patients. We are unable to explain these pathologic patterns.

Mean P100 potentials of cases in VEP studies, have not shown pathologic changes as seen in previous studies.

In our study, we could not get any potentials in VEP in four cases who had ocular findings like

uveitis etc. Even excluding these cases, four cases have showed markable increase in P100 potentials. In two cases, it was bilaterally, though unilaterally in the other two. EEGs and CT scans of these patients were normal. So, it might be thought that VEP may show the first remarks of visual pathway in-

volvement.

As a result, we can say BAEP and VEP may be useful techniques on early diagnosis of neuro-Behçet. But for sure, further studies are necessary to prove the usefulness of these techniques.

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