



Abnormal Somatosensory Discrimination in Dry Eye Syndrome

Kuru Göz Sendromunda Anormal Somatosensoryel Diskriminasyon

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Dear editor,

The somatosensory temporal discrimination threshold (STDT), which is the electrophysiological response and corresponds two-point discrimination evaluated during the neurological examination, is the shortest interval at which an individual recognizes two stimuli as asynchronous (1). The major area mediating STDT is the primary somatosensory cortex (S1). Patients with an increased blinking rate had a normal blink reflex (BR) recovery but high STDT values comparable with patients with blepharospasm (2). In dry eye syndrome, maladaptive blink oscillations, which are repetitive spontaneous blinks, develop due to corneal irritation. In a study of BR, the authors determined increased blink oscillations and amplitude of reflex in patients with dry eye (3). They concluded that exaggerations of BR adaptations triggered by dry eye had similarities to benign essential blepharospasm (3).

This study included 17 patients who were diagnosed with dry eye syndrome and admitted for a follow-up visit between September 2018 and November 2018 to the ophthalmology outpatient clinics specializing in dry eye syndrome. It included a control group of 14 healthy subjects of similar age and gender.

After the clinical evaluation, the authors performed routine nerve conduction studies and determined STDT on the second finger. All electrophysiological examinations were performed using a Neuropack Sigma MEB-5504k (Nihon Kohden Medical,

Tokyo, Japan). Silver-silver chloride surface-recording electrodes were used for routine nerve conduction studies. The filters were set to 3 kHz low pass and 20 Hz high pass. The time and amplitude sensitivities were adjusted to 20 ms/div and 200 µV, respectively. The STDT was investigated according to previous studies (1,4). First, the sensory threshold of the finger was determined, which was defined as the minimal intensity perceived in five out of five consecutive stimuli. Paired tactile stimuli of square-wave electrical pulses were delivered through a stimulator placed on the volar surface of the right index finger. The initial interstimulus interval (ISI) was 0 ms, and the interstimulus duration was progressively increased in 10 ms steps of ISI (ascending stepwise method). The STDT was defined as the first of three consecutive intervals at which participants recognized two stimuli as separate.

The sensory threshold measured on the index finger was similar between the groups; however, STDT was longer in the patient group than in the control group (150.7 ± 32.4 ms vs. 45.7 ± 36.8 ms, $P = 0.000$). Further, STDT was higher in patients with primary dry eye and in patients with secondary causes compared with the control group.

In summary, the STDT was prolonged in patients with dry eye syndrome, and somatosensory dysfunction is not specific to the primary dry eye syndrome. Abnormal STDT and somatosensory dysfunction may be associated with sensorimotor mismatch due to increased input from the ocular surface as adaptive changes after increased input. Secondary causes that lead to dry eye syndrome

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may also involve the somatosensory system and central pathways separately (5). However, changes in the somatosensory network may be related to the underlying pathophysiological factor.

Ethics

Informed Consent: Written informed consent was obtained from all participants.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.E.K., A.G., C.D., S.A., Concept: M.E.K., A.G., Design: M.E.K., A.G., Data Collection or Processing: C.D., M.E.K., A.G., Analysis or Interpretation: M.E.K., S.A., C.D., A.G., Literature Search: M.E.K., S.A., A.G., Writing: M.K.E., S.A., A.G.

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