Comment on “Olfactory Function Assessment of Blind Subjects Using the Sniffin’ Sticks Test”

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When a patient loses visual ability, new synapses may develop in the brain to adapt to new situations and sustain life with other sensory organs. We appreciate the article titled “Olfactory Function Assessment of Blind Subjects Using the Sniffin’ Sticks Test,” written by Çomoğlu et al.1 In this study, olfactory functions were found to be better in blind patients than in normal individuals. Enhancement in olfactory functions may occur by development of new synapses. Brain-derived neurotrophic factor (BDNF) is a protein that facilitates the growth and differentiation of new neurons and synapses. It is active in the brain areas vital to memory and learning. In a recent study, the serum level of BDNF in patients with age-related macular degeneration (AMD) was found to be higher than that in normal individuals.2 Visual acuity is known to decrease in AMD; therefore, BDNF may be a mediator of adaptation to new conditions in situations of low vision. We suggest that BDNF plays a role in the enhancement of olfactory functions by mediating the development of new synapses. However, in a study, BDNF overexpression was found to increase olfactory bulb granule cell dendritic spine density in vivo.3 If authors have possibility, it would be a good research topic to measure BDNF levels in their study and control groups. Yet, because patients with AMD have low vision, their olfactory functions would be expected to be better than those of the healthy population. However, olfactory functions have been found to be worse in patients with AMD.4 This finding was associated with the neurodegenerative nature of AMD. Numerous studies have demonstrated the impairment of olfactory functions in neurodegenerative diseases.5 Although there is no information about the etiology of acquired blindness, the existence of AMD could have a negative impact on results of olfactory functions in the current study.

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References

Response to Comment on “Olfactory Function Assessment of Blind Subjects Using the Sniffin’ Sticks Test”

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Loss of olfactory function may be the antecedent symptom of neurodegenerative conditions such as Alzheimer’s or Parkinson’s disease. This fact seems to have a promising role on the early diagnosis of such pathologies. Brain-derived neurotrophic factor (BDNF) is a member of a group of neurotrophic proteins found in the central and peripheral nervous systems, and it induces the proliferation and differentiation of precursor immature neural cells. In our study, we wanted to investigate the olfactory abilities of congenital (early) and acquired (late) blind subjects with respect to sighted counterparts. Although we could not find statistically significant difference between the 2 groups, Duration without visual input might have a considerable impact on the enhancement of olfactory functions. Time with vision loss was minimal: 10 years with an average of 24.2 years. During olfactory loss, BDNF may show different and variable expression levels in distinct parts of the olfactory pathway.1 However, age-related macular degeneration (AMD) is known to be the major cause of blindness, especially >50 years,2 and patients with AMD have impaired olfactory functions.3 This fact might be due to the neurodegenerative basis of the disease, as well as the relatively short period with loss of vision. Periodic BDNF levels with synchronous evaluation of olfactory tests in AMD patients might be a plausible topic of potential investigation, and we thank the authors for their valuable comments.