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Symptoms of Depression in Patients with Chemosensory Disorders

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ABSTRACT

Chemosensors are frequently reported in patients with chemosensory impairment. The present investigation intends to clarify whether there are differential pacts on symptoms of depression between the types (smell dysfunction, taste dysfunction, and combination smell and taste dysfunction), severity, length, or source of dysfunction. At the same time, diminished olfaction input and taste appear to have a detrimental influence on emotional dysfunction aggravation. In patients with mixed olfactory or gustatory dysfunction in clinical practice, early management should be considered for depressive symptoms. The current study sought to compare depressive symptoms in patients with mixed olfactory/gustatory dysfunction, purely olfactory disorder, and gustatory disorder, as well as to investigate the relationships between chemosensory function and depressive symptoms in various groups.

1. Introduction

Chemosensory disorders, which include olfactory disorders and taste dysfunctions, can not only impair quality of life (QoL) but also lead to emotional dysfunction.^{1,2} Depressive symptoms are not uncommon in chemosensory disorder patients.³⁻⁵ According to Croy et al. approximately 1/4–1/3 of patients with olfactory disorders have depressive symptoms. Several studies.⁶⁻⁹ find positive correlations between olfactory deficits and depressive symptoms, but the correlation coefficients are typically small. In comparison to olfactory disorders, few studies have focused on depressive symptoms in gustatory disorder patients. Limited evidence suggests that patients with the gustatory disorder have higher depression scores, with 25–36 percent reporting

depressive symptoms.¹⁰⁻¹² A growing body of research supports the existence of a close relationship between olfaction and depression¹³⁻¹⁶, and many brain areas associated with emotion processing, such as the amygdala, hippocampus, insular, and orbitofrontal cortex, overlap with the olfactory pathway.¹⁷ Previous research has found that patients with depression have olfactory deficits¹⁷⁻²⁰ as well as numerous structural and functional abnormalities in the olfactory pathway^{21,22}

Depression related to the chemosensory disorder

Depressive symptoms are also linked to decreased odor identification.^{22,23} Systematic exposure to odors, also known as olfactory training, has been shown to

improve depressive symptoms^{23,24}, implying that increasing olfactory input may aid in emotional regulation. Fewer studies on gustatory function in patients with depression have been conducted than on olfactory disorders. There is some evidence that there is a link between taste deficits and depression, but the results are somewhat contradictory and inconclusive. According to one study, sweet taste sensitivity was influenced by the 5-HTTLPR genotype and was affected by the seasonal affective disorder.²⁵ Another study²⁶ found no link between winter depression and changes in gustatory function.

Surprisingly, the reciprocal interaction between chemosensory change and emotion has been reported on numerous occasions.^{27,28} Depression can be caused by chemosensory disorders. First, olfactory impairment can cause limitations in olfactory-related areas, which can affect QoL and increase the likelihood of depression. Second, the olfactory loss may reduce input from the olfactory bulb into the limbic system and insula via the amygdala, resulting in dysfunction of convergence and salience processes and functional abnormalities of the brain.

Depression can also have an impact on chemosensory function. On the one hand, decreased attention and a slower turnover rate of olfactory receptor neurons in the olfactory epithelium may contribute to decreased olfactory function in depression. These effects are diminished following depression remission. In contrast, decreased olfactory bulb (OB) volume in depression patients may result in reduced signaling from the OB to the central olfactory areas, exacerbating depressive symptoms.

Although early studies included patients with smell and taste dysfunctions, few studies included patients with mixed olfactory/gustatory dysfunction, which is a common patient population in clinical practice. Recent research suggests that combined sensory impairments may result in lower QoL, implying that the reduced input from different sensory channels may have an additive effect.²⁹ This study, however, did not include a depression assessment.

2. Conclusion

It was hypothesized that concurrent decreases in the olfactory and gustatory senses would aggravate emotional dysfunction and that patients with mixed olfactory/gustatory dysfunction would have more severe depressive symptoms than patients with only one of these disorders. Furthermore, because of the reduced olfactory input, patients with anosmia may exhibit more obvious depressive symptoms than patients with hyposmia or controls. Furthermore, because different causes of chemosensory disorders may have different effects on QoL [1, 2], we hypothesized that they may also have different effects on depression. The current study sought to compare depressive symptoms in patients with mixed olfactory/gustatory dysfunction, purely olfactory disorder, and gustatory disorder, as well as to investigate the relationships between chemosensory function and depressive symptoms in various groups.

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