SUPPLEMENTARY MATERIAL

Methods

Olfactory function test

The evaluation of olfactory function was conducted using the YSK olfactory function (YOF) test kit (RHICO Medical Co., Seoul, Korea), which is specifically designed for Koreans. The test comprises three subdomains: threshold, discrimination, and identification.[1] The threshold test was conducted by 2-phenylethyl alcohol (PEA). The concentration of PEA was divided into 12 levels, and patients received higher scores for perceiving the odor at lower concentrations. The score range for the odor threshold test was 1 to 12.

The odor discrimination test consists of 12 items, where patients had to choose the correct answer among one target and two non-target odorants for each item. The odor identification test also comprised 12 items, where patients were presented with one odorant and four response options for each item. The score range for both the odor discrimination and identification test was 0 to 12. Overall, the total scale ranged from 1 to 36, with a score of 14 or below indicating anosmia, a score of 21 or below indicating hyposmia, and a score above 21 indicating normosmia.

Gustatory function test

The assessment of gustatory function was conducted using YSK gustatory function (YGF) test kit (RHICO Medical Co., Seoul, Korea), specifically designed for Koreans to measure the threshold of five tastes: sweet, bitter, salty, sour, and umami.[2] To perform the taste testing, a single drop of the solution was applied to the anterior one-third of the tongue, and the mouth was rinsed before each tasting.

For each taste, the examination utilized solutions with six different concentrations, and the score was determined by adding the recognition thresholds for all five tastes. A lower score is obtained if the taste was perceived at a lower concentration. The total score is 30 points, and a score of 12 or below is considered normal. Scores falling between 13 to 17 were categorized as indicative of suspicious gustatory dysfunction, scores ranging from 18 to 21 were considered as partial loss, and scores of 22 or above were regarded as complete loss of gustatory function.

Statistical analysis

For the analysis of continuous data between two independent groups, we utilized either the independent *t*-test or the Mann–Whitney test. Post hoc analysis was done using the Bonferroni method for multiple comparisons. Furthermore, we employed multiple linear regression analysis to identify predictors of cognitive function. Utilizing the stepwise method, we added variables that improve the fit significantly while removing insignificant ones, thereby obtaining the most explanatory combination of variables. Categorical data were analyzed using the chi-square test. In this study, a p value below 0.05 was considered statistically significant. All the statistical analyses were performed using SPSS version 27.0 (IBM Corp., Armonk, NY, USA).

REFERENCES

1. Ha JG, Kim J, Nam JS, Park JJ, Cho HJ, Yoon JH, et al. Development of a Korean culture-friendly olfactory function test and optimization of a diagnostic cutoff value. Clin Exp Otorhinolaryngol 2020;13:274-284.
2. Hwang CS, Kim JW, Al Sharhan SS, Kim JW, Cho HJ, Yoon JH, et al. Development of a gustatory function test for clinical application in Korean subjects. Yonsei Med J 2018;59:325-330.