Retronasal olfactory function in patients with sensorineural smell loss and subjectively normal flavour perception

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Background The human sense of smell constitutes the main part of flavour perception. Patients with loss of olfactory function complain in most cases of diminished perception during eating and drinking. However, some patients with smell loss still report normal flavour. The aim of the present study was to investigate orthonasal and retronasal olfactory function in patients with smell loss and subjectively normal flavour perception.

Material and methods 19 patients with self-reported olfactory impairment but subjective normal to excellent flavour perception were included. Olfactory performance was assessed using the Sniffin’ Sticks (1) for orthonasal and the Candy Smell Test (CST) (2) for retronasal function. Visual analogue scales (0= no perception, 10= excellent perception) were used for the self-assessment of odor perception (SOP), taste perception (STP) and flavour perception (SFP).

Results Mean/SD SOP of all patients was 1.6/1.6. Mean/SD SFP was 8.0/1.8. Mean/SD orthonasal TDI score of all patients was 14.4/5.3 (range 6-25.25) with twelve patients classified as anosmic and seven as hyposmic. Mean/SD retronasal CST score was 8.8/2.7 (range 3-13) within the range of anosmia/hyposmia. No correlation was found between SFP and the CST (p=0.62).

Discussion Our results show relying on the patients’ subjective reports only is not predictable of real function in most cases. In our patients subjectively normal flavour perception during food intake was not mediated by residual retronasal olfactory function. That means that there seems to be at least part of the representation of retronasal smell within flavour perception mediated by memory recall/unconscious memory recall of “flavour templates”.

Conclusion The present results show that normal subjective flavour perception in patients with sensorineural smell loss is not confirmed by retronasal smell tests indicating the importance of smell tests in clinical routine.


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