Selective Taste Control of Meals to Tackle Problematic Food Intake due to Long-term Dysgeusia after a COVID-19 Infection: A Case Report.

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Background

Coronavirus disease 2019 (COVID-19) is an ongoing global pandemic caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). COVID-19 is highly contagious with high morbidity and mortality. Globally, as of 29 October 2021, there have been 245.373.039 confirmed cases of COVID-19, including 4.979.421 deaths, reported to WHO [1], making it one of the deadliest pandemics in history.

COVID-19 has a varied clinical presentation. Nasal congestion, rhinorrhea, smell and taste dysfunction, sore throat, headache, pharyngeal erythema, upper respiratory tract infection, tonsil enlargement and fever all could be the presenting symptoms of COVID-19 [2,3]. Patients with COPD, cardiovascular disease and hypertension are at higher risk of severe illness and ICU admission [4]. COVID-19 can involve symptoms and medical complications that last for months after initial recovery, which has come to be called Long-COVID or COVID long-haulers [5-11].

Smell and taste dysfunction is one of the most common and early signs of COVID-19 [12]. However, about 25% of 3,762 respondents (56 countries) with symptoms for over six months still experienced changes to taste and smell in month seven [13]. Prolonged smell and taste disturbances might lead to loss of appetite, a disrupted diet and in the longer term risk of malnutrition. Therefore, prevention, diagnosis and treatment of risk for malnutrition should be considered in the management of Long-COVID-19 patients to improve both short- and long-term prognosis. The European Society for Clinical Nutrition and Metabolism (ESPEN) recently published a guideline [14] with the aim to provide concise experts statements and practical guidance for clinical nutritional management of COVID-19 patients, with regard to those in the ICU setting or in the presence of older age and polymorbidity. However, to the best of our knowledge, a guideline for the management of COVID-19 patients suffering long-term smell and taste disturbances in primary health care, is lacking. Our focus is therefore on creating an appropriate approach to COVID-19 induced long-term and burdensome dysfunction in smell and taste.

In this case we describe the effects of an innovative gastrological approach applied in a patient suffering long-term dysgeusia after a COVID-19 infection. This gastrological approach involves selective taste control and is originally intended to improve food intake in cancer patients suffering chemotherapy induced taste disturbances.

Case

This 46-year-old lady presented herself on November 10, 2020 in the emergency department of a Belgian hospital with a series of typical symptoms (See table 1). A COVID-19 infection was diagnosed using a nasal pharyngeal swab (PCR-test). Two weeks later the COVID-19 diagnosis was confirmed by a blood test. Hospitalization was not considered necessary. The patient was quarantined at home and spontaneously recovered from most symptoms after a few weeks. However, 84 days after initial diagnosis she still suffers severe dysgeusia. The patient reports that this persistent and stressful symptom has a continuous negative impact on her food intake and her quality of life in general. Therefore, she volunteered for a taste assessment in the Center for Gastrology and Primary Food Care (CG&PFC).

Table 1: Patient characteristics and symptoms

	ED* Hospital	Center for Gastrology & Primary Food Care	
Patient characteristics	**At the time of diagnosis**	**84 days after diagnosis**	**114 days after diagnosis**
Age (years)	46	46	46
Bodyweight (Kg)	92	87,7	86,2
Height (cm)	159	159	159
Body Mass Index	36,3	34,69	34,09
MNA-sf**	-	10	10
Smoking	no	no	no
e-sigaret	no	no	no
Pre-existing pulmonary disease	no	no	no
Symptoms			
Fever	Yes	-	-
Dry cough	Yes	-	-
Cough with mucus	-	-	-
Dyspnea	Yes	Yes	Yes
Chest tightness	Yes	-	-
Running nose	Yes	-	-
Sore throat	Yes	-	-
Loss of smell/taste	Yes	Yes	Yes
Headache	Yes	-	-
muscle strain	Yes	Yes	Yes
Fatigue	Yes	Yes	Yes
Diarrhea	-	-	-
Abdominal pain	-	-	-
Nausea/vomiting	-	-	-

*ED: Emergency Department **MNA-sf: Mini Nutritional Assessment-Short Form.

The CG&PFC is a non for profit organization founded in February 2011 and is located in Leuven (Belgium) www.centerforgastrology.com/en/intro. This center has developed a gastrological approach

to overcome chemotherapy-induced taste disturbances (CiTD) in cancer outpatients [15]. This includes selective management of gustatory, olfactory and trigeminal perceptions of foods and provides recipes to self-prepare personalized meals at home.

Methods

An O-Box assessment [15] was used to map the patient's current gustatory, olfactory and trigeminal functions. Then the patient was asked to describe five recipes of hot meals that she regularly prepares herself at home. Subsequently, these favorite recipes were edited by a chef-gastro-engineering and based on the results of the O-Box assessment. The favorite hot meals suggested by the patient were (1) Italian lasagna, (2) Mexican burritos, (3) Sweet potatoes and green beans, (4) Parsnips and Brussels sprouts, and (5) Vegetarian quiche. The personalized recipes were delivered to the patient online within 48 hours after the O-box assessment. The patient then had to prepare these five different and personalized dishes at home during the following month. Immediately after consuming each personalized meal, the patient was asked to complete a short questionnaire.

Results

At the consumption of each personalized meal, the patient scored her ability to smell/taste as 'zero' on a Likert scale (range 0-10; 0 = not at all). The extent to which all five personalized meals were enjoyed scored an average of 9 (10 = maximum enjoyment) (See table 2).

Table 2: Reported data after consuming each of the personalized favorite hot meals (N =5)

Questions	Mean Lickert score [Max score = 10]
To what extent did you enjoy this personalized hot meal?	9
To what extent are you currently able to smell?	0.8
How blocked is your nose today?	0
Assess your current sense of taste	0.6
Assess your ability to perceive burning/cooling/tingling sensations in your mouth	5.4
How tired are you today?	6.4

Lickert scale (0 – 10): 0 = not at all, most worst or totally absent; 10 = yes, very best, totally present.

Despite an average score of 6.8 for fatigue (10 = total exhaustion) and a stressful dysgeusia the patient reported that she was able again to consume a proportion comparable to the situation before her COVID-19 infection.

Conclusion

Selective taste control of meals, a method originally intended to improve the food intake of cancer patients with taste disorders due to chemotherapy, is also showing positive results in this patient suffering from long-term taste problems due to a COVID-19 infection. This innovative approach should be further investigated in a larger group of patients with long-term dysgeusia due to a COVID-19 infection.

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