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Original Research Article

Recovery of Smell and Taste Loss in COVID-19 Patients

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Abstract

A significant proportion of people infected with SARS-CoV-2 report a new onset of smell or taste loss. The duration of the chemosensory impairment and predictive factors of recovery are still unclear. We aimed to investigate the recovery of smell and taste loss in COVID-19 patients who suffered from varying disease severity and chemosensory impairment severity. Subjects above age of 18 years who were infected with covid 19 virus and recovered from Covid 19 infection were included in this study. This was questionnaire based study . Questions regarding features of loss of smell and taste sensations in covid 19 patients were asked with help of Google forms.102 subjects participated in this study. 33.33% subjects regained smell sensation in 7 days, 51.38% regained smell sensation in 8-14 days and 15.27% had taken more than 14 days to regain smell sensation. 30.18 % subjects had taste recovery in less than 7 days. 58.49% subjects had recovery of taste in 8 to 14 days. 11.32 % subjects had regain of taste in more than 2 weeks. Recovery of chemosensitive dysfunction occurred within 1–3weeks; most of them recovered within 2 weeks . This means the dysfunction is transient in most of the cases and reversible.

Keywords: COVID-19, Recovery, Smell, Taste

Introduction

Since the coronavirus disease-2019 (COVID-19) pandemic outbreak, many studies have demonstrated that a significant proportion of people who test positive for COVID-19 have a new onset of smell or taste loss [1–4]. The Centers for Disease Control and Prevention, the World Health Organization, and National Public Health Authorities added 'new loss of taste or smell' to the list of symptoms related to COVID-19. The pathogenesis of anosmia related to SARS-CoV-2 has not been defined and most studies have shown that COVID-19-related olfactory dysfunction demonstrates distinct characteristics differentiating it from post-viral olfactory

loss related to other viral causes [5]. The olfactory loss is of sudden onset, usually profound, and comes early in the disease process [6,7]. The duration of the smell and taste disorders in COVID-19 disease is still unclear. Many studies reported a quick recovery in the majority of patients [8,9]. However, chronic symptoms after COVID-19 disease, including persisting fatigue and loss of taste and smell, have been reported by patients even several months after the onset of the disease [10,11]. The long-term recovery and the influence of the COVID-19 severity or the chemosensory dysfunction severity on the outcome are not clear. Anosmia induced by COVID-19 infection was most probably linked to damage to the neuroepithelium rich in ACE2 receptor (especially stem cells).[12] In this regard, Gupta et al performed a bioinformatic analysis of single-cell expression profiles underscored selective expression of angiotensin-converting enzyme2 (ACE2) in a subset of horizontal basal cells and sustentacular cells of the olfactory mucosa in humans. They evaluated the expression of ACE2 transcript in olfactory mucosa originated single cells from the recent report by Durante et al and suggested that loss of smell in the infected patients is most unlikely due to the direct impairment of the olfactory sensory neurons; in particular the sustentacular cells and the horizontal basal cells are the potential cell types that are highly susceptible to viral entry.[13] We aimed to investigate the recovery of smell and taste loss in COVID-19 patients who suffered from varying disease severity and chemosensory impairment severity.

Material and Methods

This study was done to assess the recovery of loss of smell and taste sensations in Covid 19 infected subjects. Subjects above age of 18 years who were infected with covid 19 virus and recovered from Covid 19 infection were included in this study. Patients with proven COVID-19 infection by realtime polymerase chain reaction (RTPCR) on nasopharyngeal and oropharyngeal swabs were enrolled in the current study. This was questionnaire based study . Questions regarding features of loss and regain of smell and taste sensations in covid 19 patients were asked with help of Google forms. Informed consent was taken from subjects and participation in this study was voluntary. 102 subjects participated in this study . Both male and female adults were included in this study. Following questions were asked to subjects who had recovered from Covid 19 .

1. Age in Years.
2. Covid 19 RTPCR test was positive or negative.
3. Covid 19 infection was symptomatic or asymptomatic.
4. Gender.
5. How many days there was loss of smell, loss of taste sensation.
6. Did smell and taste regain at same time or earlier than other.
7. Was there altered smell sensation after recovering from covid 19 infection.

Data was analysed and expressed in tables as frequency and percentage.

Results :

102 subjects were included in this study . 51 were male and 51 female subjects.

Table 1: Number of Covid 19 subjects with loss of smell and taste sensation

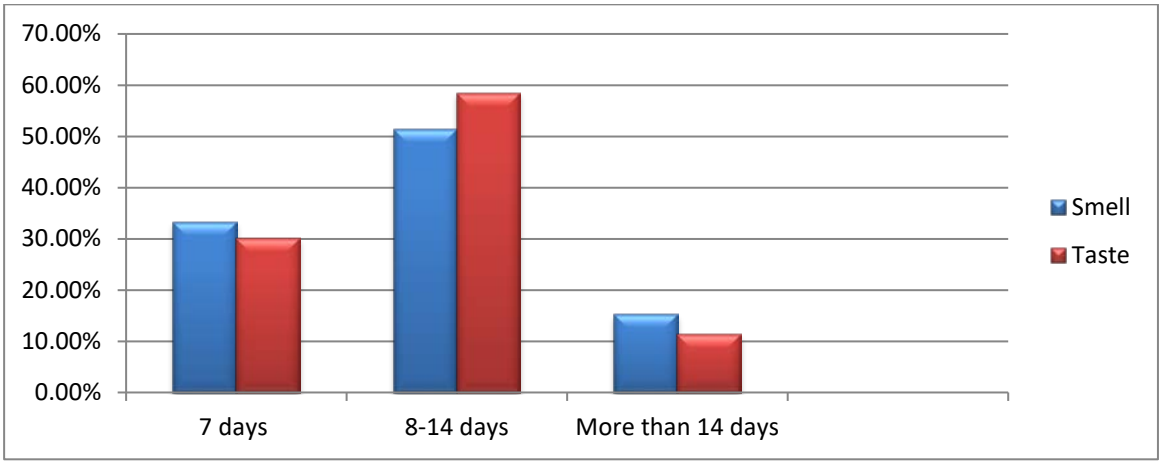
	Total subjects n=102	Percentage
Loss of smell	49	48.03 %
Loss of taste	30	29.41 %
Loss of both smell and taste	23	22.54 %

Table 1 shows number of covid 19 subjects with loss of smell and taste sensation . 48.03 % subjects had loss of smell sensation. 29.41% subjects had loss of taste sensation, whereas 22.54 % subjects had loss of both smell and taste sensation.

Table 2: Duration of regain of loss of smell and taste sensation

Duration in days	Regain of Smell n=72	Regain of Taste n=53
In 7 days	24 (33.33%)	16 (30.18%)
In 8-14 days	37 (51.38%)	31 (58.49%)
More than 14 days	11 (15.27%)	06 (11.32%)

Table 2 and Graph 1 shows 33.33% subjects regained smell sensation in 7 days, 51.38% regained smell sensation in 8-14 days and 15.27% had taken more than 14 days to regain smell sensation. 30.18 % subjects had recovery of taste in less than 7 days. 58.49% subjects had recovery of taste in 8 to 14 days. 11.32 % subjects had regain of taste in more than 2 weeks.



Graph 1: Duration of Regain of Smell and Taste .

Table 3 : Regain of smell and taste sensation

	Number of subjects n=102	Percentage
Regain of smell earlier	32	31.37 %
Regain of taste earlier	37	36.27 %
Both at same time	33	32.35 %

Table 3 shows regain of smell and taste sensation. 31.37 % subjects had regain of smell earlier than taste sensation. 36.27 % had regain of taste sensation earlier than smell . 32.35 % subjects had regain of smell and taste sensation at same time.

Discussion:

It is now evident that smell and/or taste loss may be consistent accompanying symptoms of SARS-CoV-2 infection. Most observations suggest transient anosmia with recovery after days to weeks, but it remains unclear in how many cases this insult would be permanent [14].The exact pathogenesis of olfactory upset in such patients is still ambiguous, however, SARS-CoV-2 seems to target non-neural cell types in the peripheral olfactory system rather than directly enter olfactory neurons, and it seems to be enough to generate

subsequent harm that would in turn cause impairment of the olfactory neurons function altering the odor transduction which takes place on their cilia [15]. We strongly believe that the short-term COVID-19-linked anosmia reported throughout the literature is based on the hypothesis that SARS-CoV2 affects dramatically the olfactory epithelium, which can quickly renew and recover following the period of viral clearance [16]. In our study 48.03 % subjects had loss of smell sensation. 29.41% subjects had loss of taste sensation, whereas 22.54 % subjects had loss of both smell and taste sensation. 33.33% subjects regained smell sensation in 7 days, 51.38% regained smell sensation in 8-14 days and 15.27% had taken more than 14 days to regain smell sensation. This shows about 85% of covid 19 patients showed regain of smell within 2 weeks. 30.18 % subjects had recovery of taste in less than 7 days. 58.49% subjects had recovery of taste in 8 to 14 days. 11.32 % subjects had regain of taste in more than 2 weeks. This shows about 88% of covid 19 patients showed regain of taste within 2 weeks. 31.37 % subjects had regain of smell earlier than taste sensation. 36.27 % had regain of taste sensation earlier than smell . 32.35 % subjects had regain of smell and taste sensation at same time.

Recovery of chemosensitive dysfunction occurred within 1–3weeks; most of them recovered within 2 weeks [17]. This means the dysfunction is transient in most of the cases and reversible.

Conclusion :

Smell and taste loss is highly prevalent in COVID-19 of all levels of severity. Most patients recover fast. The time from chemosensory loss to recovery for the patients who recover is associated with the severity of impairment. Less severe hyposmia tends to resolve quicker. Anosmia and ageusia dysfunction is associated with corona virus disease and may be the only symptom that presents the disease. Further objective studies with larger sample are required to cover chemosensitive dysfunctions, as the recognition of this dysfunction may help the COVID-19 diagnosis, and prevent the spread of this disease.

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