

INCIDENCE AND RECOVERY OF CHEMOSENSITIVE DYSFUNCTION IN COVID-19 POSITIVE PATIENTS

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Research Article

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Abstract

Background: the objective of this study is to find the incidence of chemosensitive dysfunction in COVID-19 positive patients and its recovery.

We collected the data from Sixty-five patients, all Covid-19 positive, quarantined in hospital between 5.4.2020 and 17.5.2020, by a questionnaire distributed the quarantine ward.

Results: Smell dysfunction appeared in (89.23%) with or without other symptoms of COVID-19. (39.66%) had the sense of smell recovered. Taste dysfunction was found in (83.08%) patients with other COVID-19 symptoms. only (29.63%) of them recovered. The recovery took 1-3 weeks, most cases within 1 week or less. As the only symptom before COVID-19 confirmation, (18.46%) and (15.38%) had smell dysfunction and taste dysfunction respectively. Most of the chemosensitive dysfunction affected the 4th decade of age.

Conclusion: Chemosensitive dysfunction is associated with COVID-19, and may be the only presenting symptom of the disease. This makes the ENT doctors in the first line of contact with corona virus. Further objective studies are required to cover chemosensitive dysfunctions, as the recognition of this dysfunction may help the diagnosis of COVID-19, and prevent the spread of this disease.

Background

There are three types of presentations in COVID-19: asymptomatic, mild upper respiratory tract infection (URTI), and severe systemic disease such as bilateral interstitial pneumonia.¹

Olfactory dysfunction (OD) is already recognized in ENT practice after many viral infections, which can cause OD by inflammation in the sinonasal mucosa and rhinorrhea; the most common viruses being rhinovirus, parainfluenza Epstein–Barr virus, and some coronavirus.²

In 2018, Dubé et al, found that the previous form of human coronavirus HCoV OC43 invades the central nervous system through the olfactory epithelium and initiates neuropropagation at olfactory bulbs.³ Many other recent studies found that smell and taste dysfunctions represent common clinical findings in COVID-19 patients.⁴

Therefore, it is logical to consider the relationship between OD and the novel COVID-19.

In Iraq, the COVID-19 affected the public life, as in all other affected countries, and since the pandemic, there was an increase in the reported cases of OD and taste loss in hospitals and private clinics.

Therefore, we are investigating the incidence in OD and taste disorders as an isolated symptom of COVID-19 in Iraqi patients.

Methods

We collected the data from Sixty-five patients, all Covid-19 positive, quarantined in quarantine hospital between 5.4.2020 and 17.5.2020, by a questionnaire distributed the quarantine ward.

The patients were included if they were proved positive for COVID-19, and they are fully conscious and had willingly given the formal consent of being enrolled in the research.

We excluded patients who had olfactory problems before January 2020.

Results

Sixty-five COVID-19 positive patients, 27 males (41.54 %) and 38 females (58.46 %), average age (41.2) years.

Smell dysfunction appeared in (58 /65, 89.23%) patients with or without other symptoms of COVID-19, twelve patients of them had been tested for COVID-19 because they were in contact with other positive symptomatic patients. All these (12/ 65 18.46%) patients confirmed that they had no symptoms other than loss of sense of smell before they were tested for COVID-19, (10/65, 15.38%) patients of them, had taste loss in addition.

Insert Figure 1 here.

Taste dysfunction was found in (54/65, 83.08%) patients with other COVID-19 symptoms. only (16/54, 29.63%) of them recovered.

Anosmia was mild in (39/58, 67.24%) of patients, of them (16/39, 41.03%) were males, (23/39, 58.97%) were females. (11/58, 18.97%) had moderate anosmia, of them (5/11, 45.45%) were males, (6/11, 54.55%) were females. (8/39, 20.51%) had complete anosmia, (3/8, 37.5%) were males and (5/8, 62.5%).

Anosmia severity	Number	Number %	Male	male %	Female	Female %
Mild	39	67.24	16	41.03	23	58.97
moderate	11	18.97	5	45.45	6	54.55
Complete anosmia	8	13.79	3	37.5	5	62.5
Total n.	58	100				

Table 1: Anosmia severity gender distribution.

Taste loss severity	number	n%	Male	male %	Female	Female %
Mild	37	68.52	15	40.54	22	59.46
moderate	12	22.22	7	58.33	5	41.67
CompleteTaste loss	5	9.26	2	40.00	3	60.00
Total n.	54	100.00				

Table 2: Taste loss severity in relation to gender distribution.

Insert Figure 2 here.

Insert Figure 3 here.

Anosmia appeared in the following time pattern in relation to the confirmation of COVID-19: 1.72% after, 20.68% before less than a week, 31.03% before 1 week, 32.76% before 2 weeks, 10.34% before 3 weeks, 3.45% before 1 month.

(23/58, 39.66%) patients had the sense of smell recovered. The recovery took 1-3 weeks to occur. The time taken to recover the smell distributed as 21.74% recovered within less than a week, 52.17% 1 week, 21.74% within 2 weeks and 4.35% 3 weeks.

Insert Figure 4 here.

The time for taste recovery distributed as 25% recovered within less than a week, 50% a week, 18.75% within 2 weeks and 6.25% 3 weeks.

Insert Figure 5 here.

The most common complaints were high temperature (63.08%), cough (60.00%), Headache (52.31%), Dyspnoea (47.69%), both Sore Throat and Diarrhea (32.31%) each and Chest pain or Tightness (30.77%). (Figure 6) show the percentage of different patients' complaints.

Insert Figure 6 here.

The majority of patients were non-smokers, fifty-seven patients (87.69%) while only eight (12.31%) patients were smokers.

Discussion

Viral infections are common causes of olfactory loss, and transient loss is likely under-reported.⁵ Over the last 2 months, an increase of sudden isolated anosmia incidence, with or without taste loss, was reported. In this study chemosensitive dysfunction appeared in high percentage of the COVID-19 positive patients, 89.23% of patients had smell dysfunction and 83.08 had taste dysfunction.^{2,6}

Sudden Isolated chemosensitive dysfunction appeared in 18.46% and 15.38% for anosmia and taste loss respectively. Interestingly, that percentages were reported in patients who were tested because of only contact with COVID-19 relative; two of them reported the loss of smell as the first symptom, while other 10 patients reported no first complaint except contact with COVID -19 positive patient, and when it comes for the symptoms questionnaire, they had reported only chemosensitive dysfunction.

Females gender was more affected in this study, although little difference. This may be because many male patient refused giving consent to participate. However, other studies reported this gender percentage.⁵⁻⁸

Most cases were mild, followed by moderate, then total anosmia and or taste loss. There must recognition of the patient felling to have chemosensitive disorders and the real presence of such dysfunction, i.e. the subjective and objective chemosensitive dysfunction. More subjective studies that investigate the taste and smell dysfunction are needed, although it is difficult to conduct such study because the risk of spread of infection.

The age group distribution shows most chemosensitive dysfunctions were in the fourth decade and around it.⁹

Regarding timing of chemosensitive dysfunctions with confirmation of COVID-19, more than half of patients the dysfunction appeared one week or less before confirmation, which may give a clue to the cause of this dysfunction.

Recovery of chemosensitive dysfunction occurred within 1-3 weeks, most of them recovered within the first week.² This means the dysfunction is transient in most of the cases and reversible. Most of them did not take specific treatment for the chemosensitive dysfunction.

Majority of patients were nonsmokers as shown by other studies.^{2,10} The relation of smoking to COVID-19 is interesting and need to be investigated in further studies.

Conclusion

Chemosensitive dysfunction is associated with COVID-19, and may be the only presenting symptom of the disease. This makes the ENT doctors in the first line of contact with corona virus. Further objective studies are required to cover chemosensitive dysfunctions, as the recognition of this dysfunction may help the diagnosis of COVID-19, and prevent the spread of this disease.

List Of Abbreviations

COVID-19 = Corona virus disease 2019

OD = Olfactory dysfunction

URTI = upper respiratory tract infection

Declarations

Ethical approval and consent to participate:

This study was approved by the institutional review board (IRB) - ethical committee at Ibn Sina University of medical and pharmaceutical sciences on the 2nd of April 2020.

Consent for Publication:

A consent to publish the anonymous data was written in the end of questionnaire in Arabic (by filling this questionnaire I consent the participation in the research and publication of medical information without publishing my name or personal information)

Availability of data and material:

The authors confirm that data and materials are available.

Competing interests:

None.

Funding:

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Authors Contribution:

Both authors contributed to the concept, design of the study, data collection, data analysis, and revised the manuscript for important intellectual content and approved the final version. (HMH) made the drafting of the manuscript.

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Figures

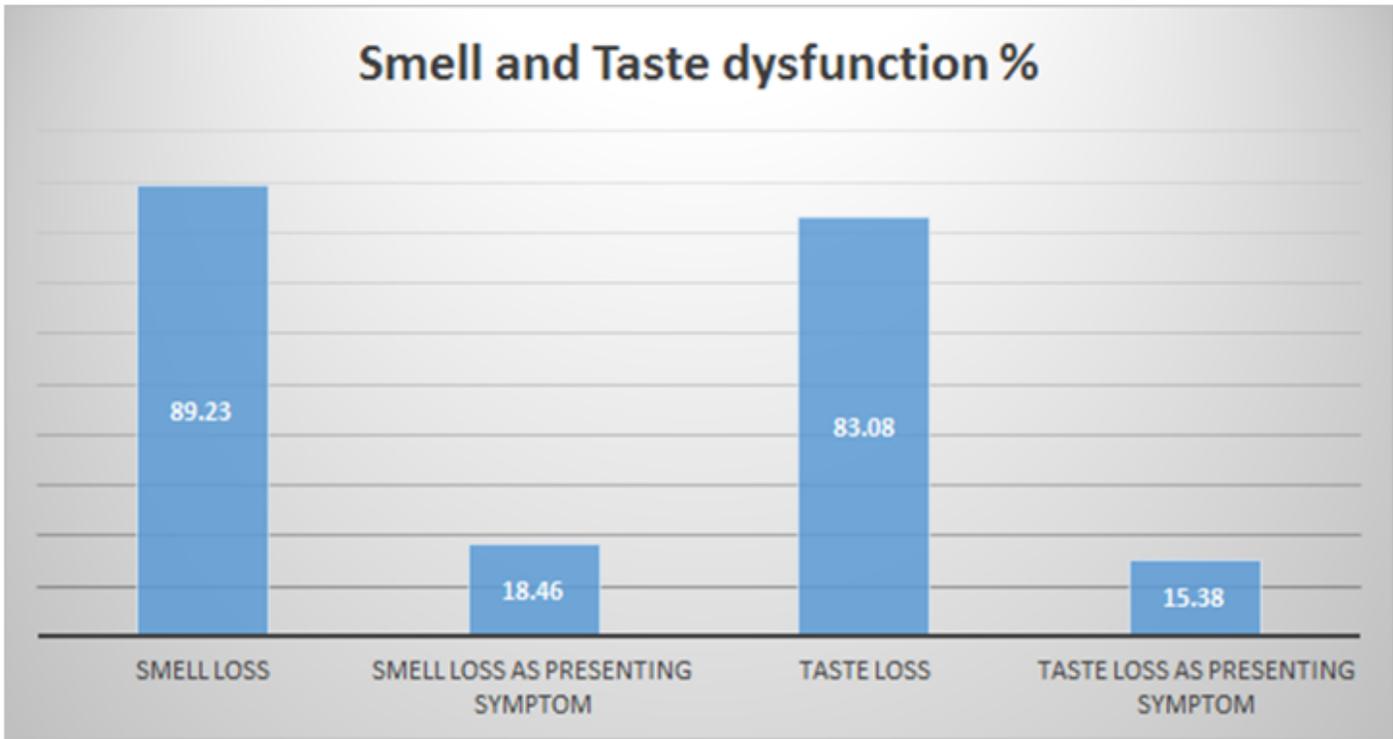


Figure 1: Smell and taste loss percentage

Figure 1

The percentage of smell and taste loss in general and as a presenting symptom of COVID-19.

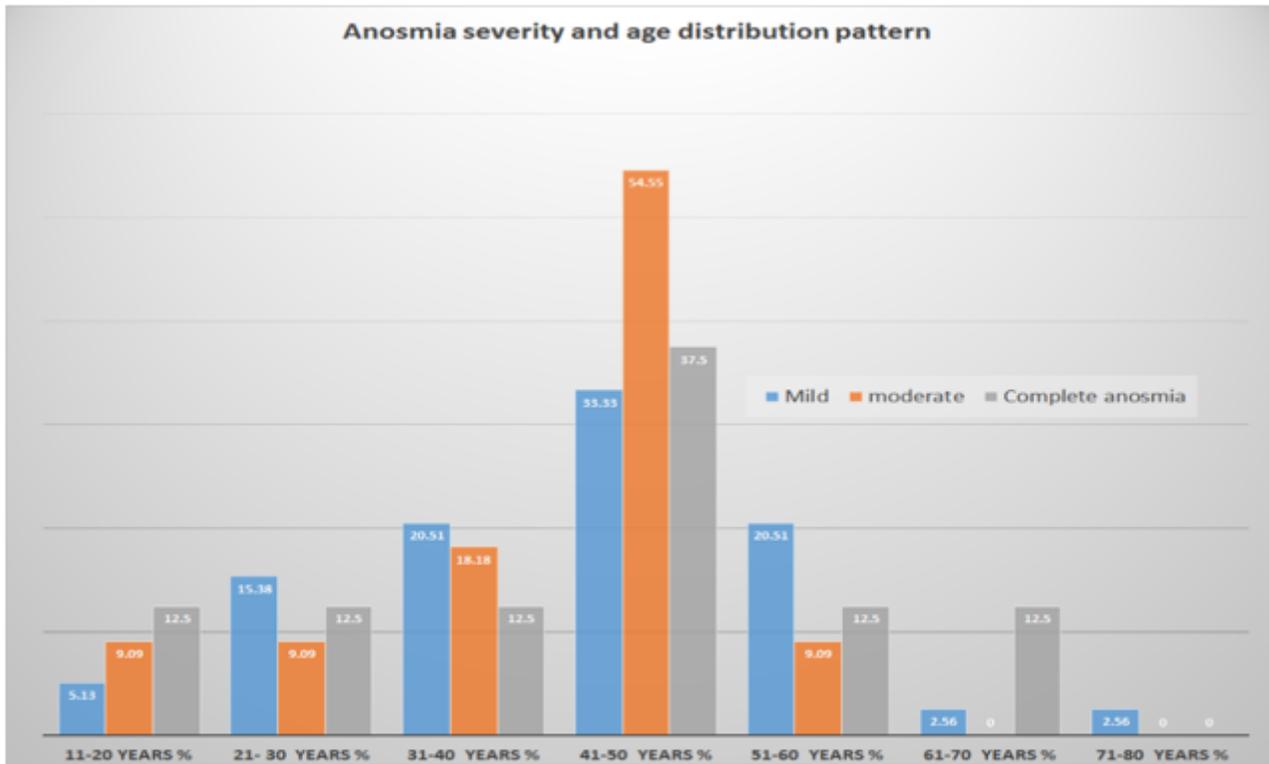


Figure 2: Anosmia severity and age distribution pattern

Figure 2

The percentage of smell loss severity in the different age groups.

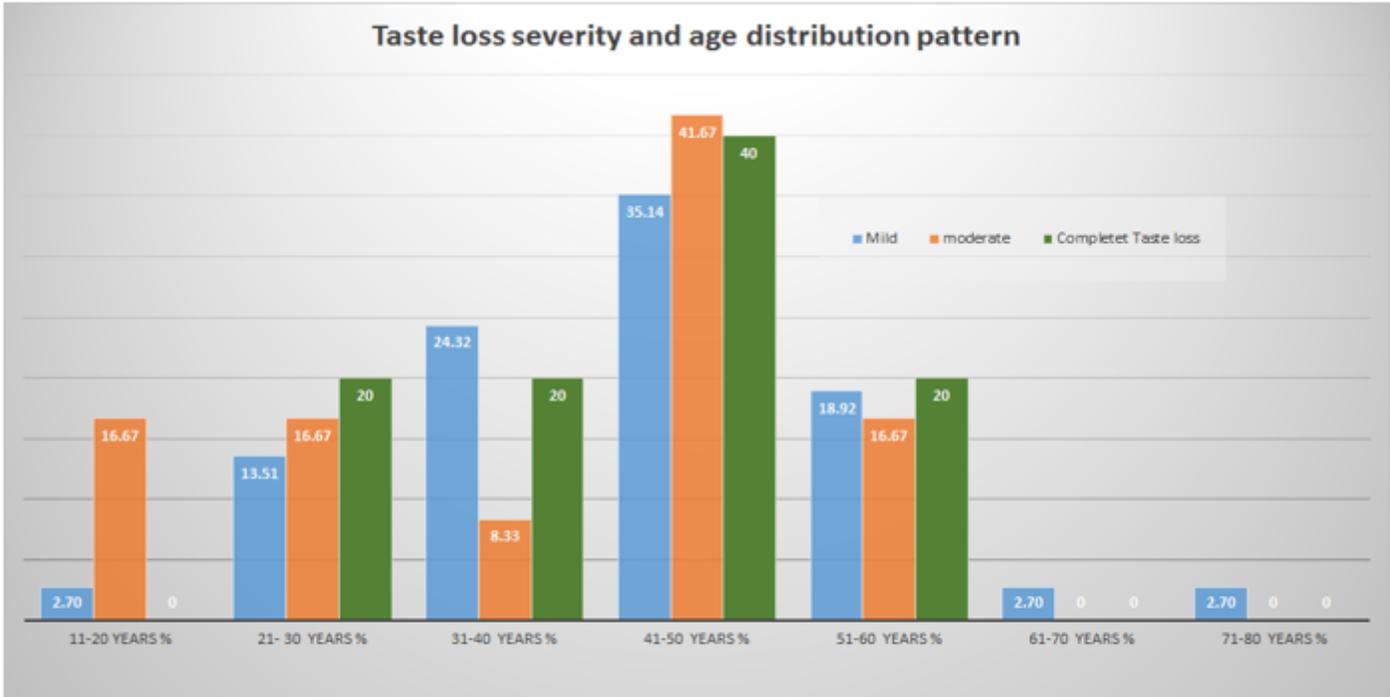


Figure 3: Taste loss severity and age distribution pattern

Figure 3

The percentage of taste loss severity in the different age groups.

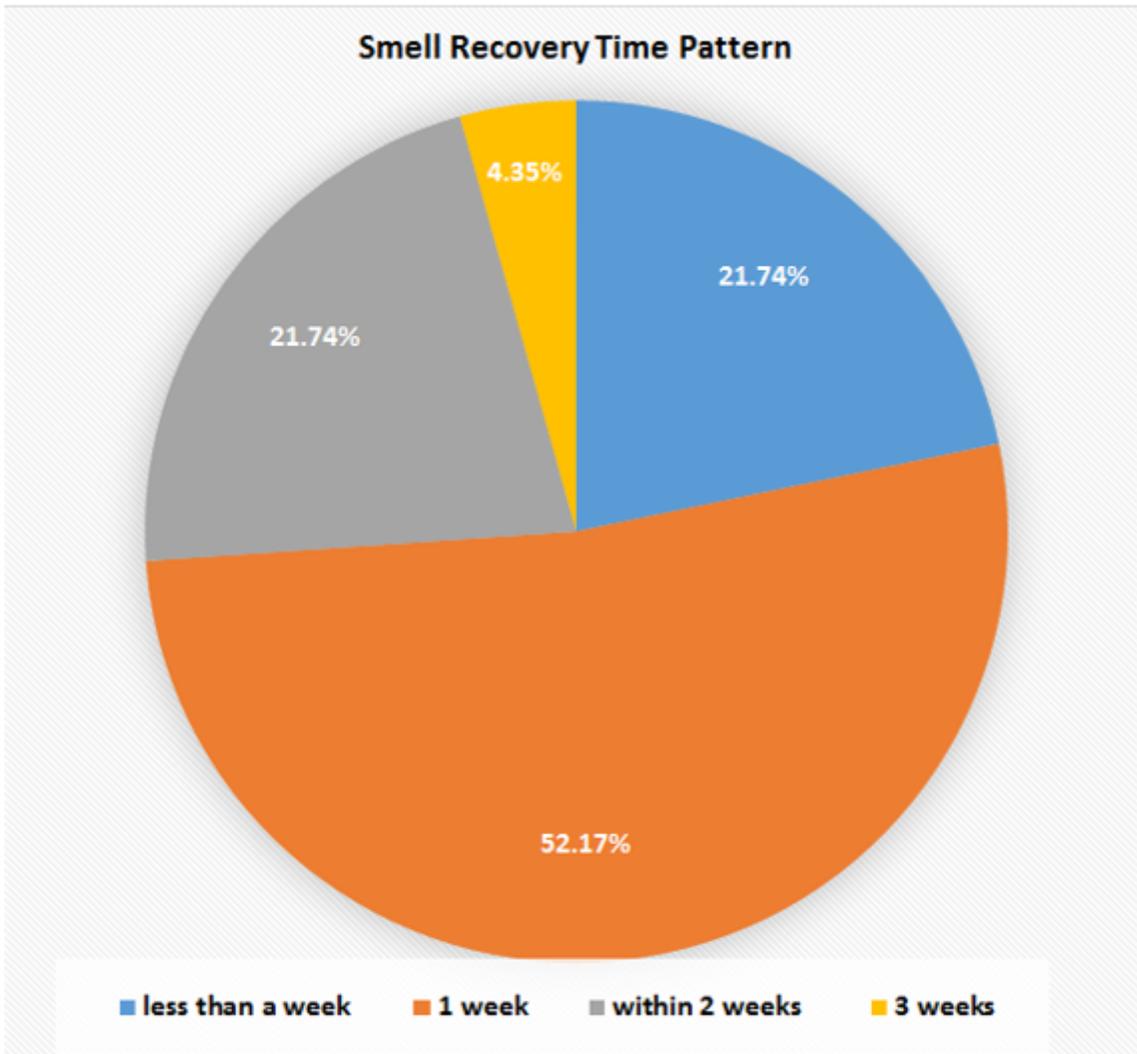


Figure 4: smell recovery time pattern.

Figure 4

The percentage of smell recovery in the corresponding periods.

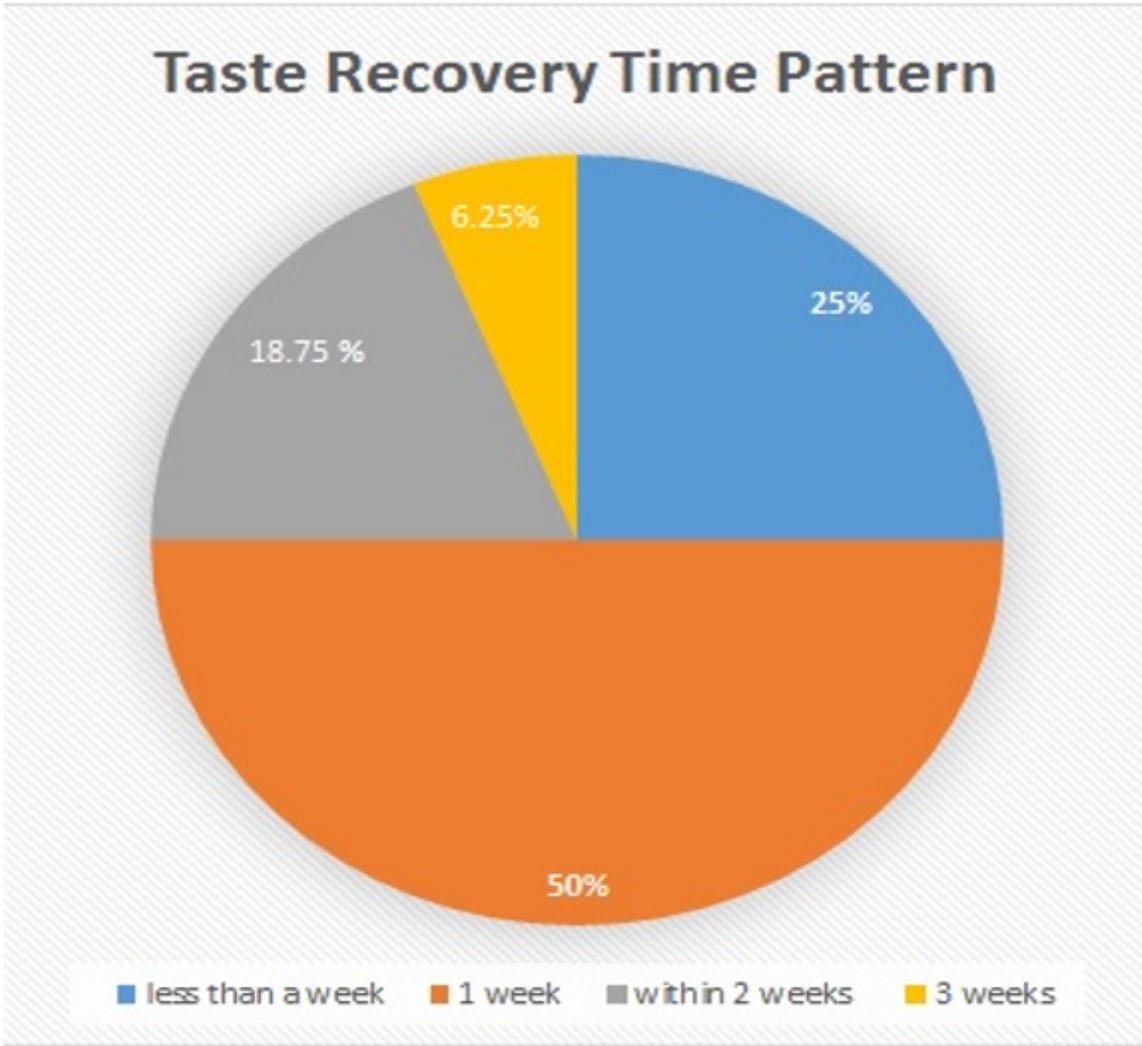


Figure 5: Taste recovery time pattern.

Figure 5

The percentage of taste recovery in the corresponding periods.

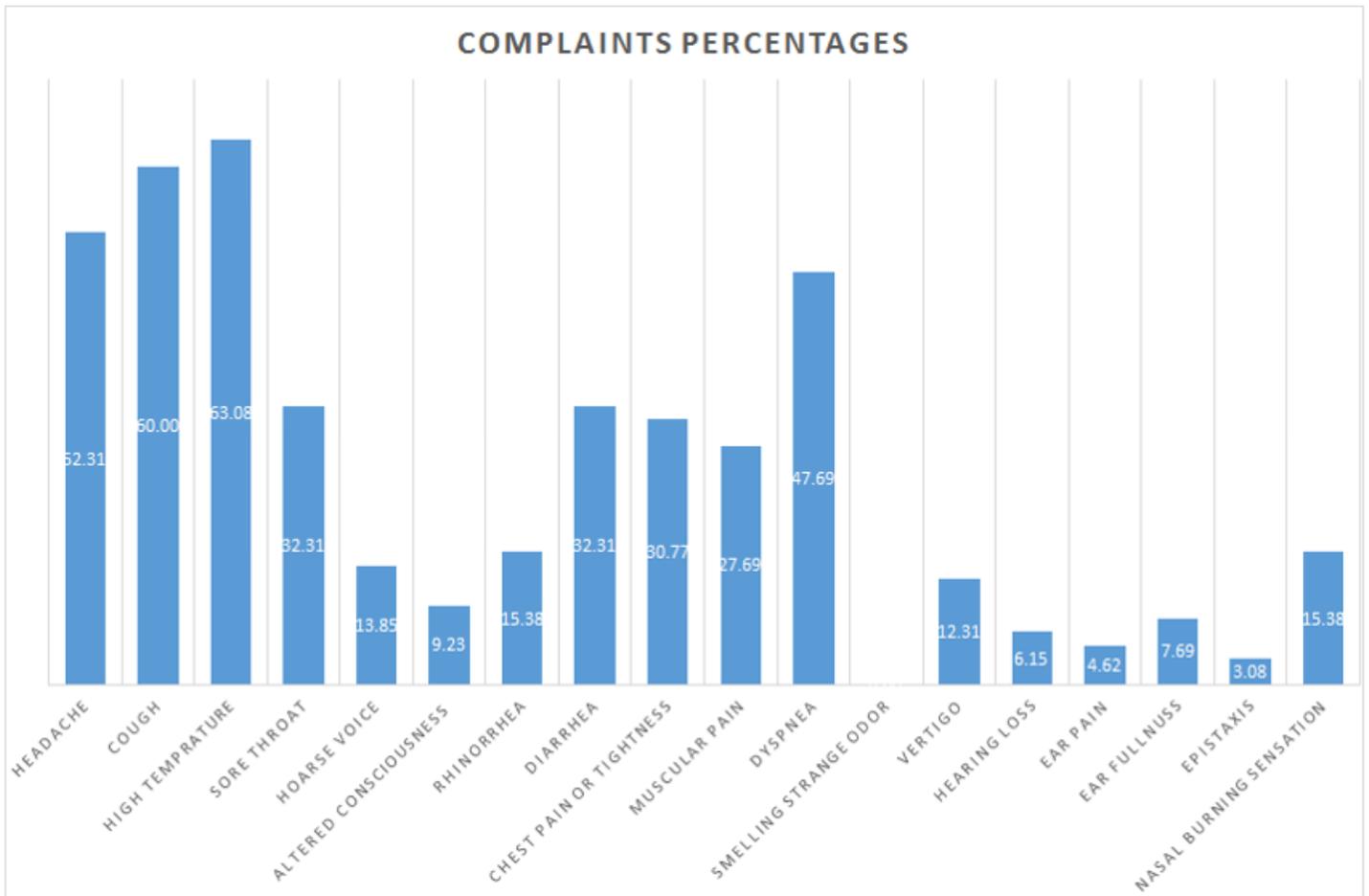


Figure 6: complaints percentage.

Figure 6

The percentage of each symptom in COVID-19 patients.