Covid 19 Associated Smell Disturbances

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Abstract

Background: Smell disturbances are associated with wide range of viral infections. Viral upper respiratory tract infections may cause acute Smell loss due to viral damage to the olfactory epithelium or central nervous system involvement is a possible causes of smell disturbances but, the exact pathogenesis unknown.
Aim of the study: assess the Covid 19 associated smell disturbances.
Method : This is prospctive study consisting of about 200 patient who confirmed COVID19 infection, who treated at Al-Diwanya pandmic hospital in Al -Diwanya city, Iraq , from July 2020 to Mayo 2021.They wire 115 male and 85 female . The ages was from 20 -80 year . This inclusion criteriah are symptomatic patient with positivly polymrase chaine reactions (PCR) test of COVID 19 infction. Exclusin criteriah are any physicaly , neurological or mentaly diseases prevent co-operations of the patients , use of central nervous system suppressing drugs.
Results: We found that 36 % of patients developed smell disturbances. Most of those affected patients are above 60 years old and majority are females (58.3%). 33.3 % of patients present with isolated smell disturbances without any other features. The time for recovery of smell disturbances ranged from 7- 21 days, and the median time for recovery was 7 days. 8.3 % of patients develop persistent smell problems.
Conclusion: Smell abnormalities are common symptom in COVID-19 patients. It may be the only manifestation of COVID-19.

Key Words: Smell Disturbances, Cause Infection, Angiotensin-converting Enzyme.
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Introduction

The coronavirus 2019 is pulmonary infection caused by the novle coronvirus 2 (SARSS CoV 2) (WJ et al., 2020; JHUM, 2020; Zhang et al., 2020; Zaki et al., 2012). COVID-19 was started in Wuhan, China at the end of 2019 (Xia et al., 2020). It spread across the world and became a pandemic disease as on March, 2020 as declared by World Health Organization (Cucinotta et al., 2020). Smell disturbances are associated with wide range of viral infections. Viral upper respiratory tract infections may cause acute anosmia due to viral damage to the olfactory epithelium (Riel et al., 2015; Hummel et al., 2011), while central nervous system involvement is a possible causes of Smell disturbances but the exact pathogenesis still unknown (Yamagishi et al., 1994, Hummel et al., 2017). Two genes are important for COVID-19 to enter the body, angiotensin-converting enzyme 2 (ACE2) and transmembrane serine protease 2 (Brann et al., 2020). Fever, cough and fatigue are the must comon features of a diseases (Huang et al., 2020; XW et al., 2020; Liu et al., 2020). Dysnea, loss of appetite and myalgia are reported in about 20%. Headache, nasal secretions, and diarrhea are less frequent (Huang et al., 2020). Throat discomfort, cervical lymphadenopathy are also reported. Many studies reported that significant number of patients had smell disturbances and the disease can present with only anosmia without any other symptoms. Those considered a carriers of the virus and can cause infection (Hopkins et al., 2020).

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Aim of the Study

Is to assess the Covid 19 associated smell disturbances.

Methods

This is a prospctive study consist of 200 patient who confirmed COVID 19 infections, who are treated and follow at Al Diwanya pandmic hospitals Al Diwanya city; Iraq, from July 2020 and Mayo 2021They are 115 male and 85 female . This age ranged from 20_80 year. The inclusions criteriah are symptomatic patient who positve polymrase chain reactions (PCR) tests for COVID_19 infections. Exclusions criteriah are any physicall neurological - mentaly diseases prevent co-operation of patients , use of central nervous system suppressing drugs. All of patient met an eligibilty criteriah and agree to participated give a signed informeed conset.

Result

These study consist of 200 patient with aCOVID _19 infections.Those are 115 male and a 85 female. The ages range from20_80 year.Tables(1) shows an ages and sex distributions of patient.

Table 1 Show an ages distributions of study populations

Age:	males	females	total:
20_30	6	4	10
31_40	8	16	24
41_50	12	7	19
51_60	13	8	21
61_70	32	19	51
71_80	44	31	75
Total	115	85	200

We found that 72 patients (36 %) developed smell disturbances in form of hyposmia, anosmia and parosmia. Most of those affected patients are above 60 years old and majority are females 42 patients (58.3%) compared to males 30 patients (41.7 %). Table (2) shows an ages and sex distributions of patient with smell disturbances.

table 2 . Shows ages and sex distributions in patients with smell disturbances

age:	males	females	total:
20_30	1	3	4
31_40	2	5	7
41_50	1	4	5
51_60	2	3	5
61_70	14	11	25
71_80	10	16	26
Total	30	42	72

24 patients (33.3 %) present only with smell disturbances without any other features. The maximum time for recovery of smell disturbances was 21 day, and the median time for recovery was 7 days. 6 patients (8.3 %) develop persistent smell problems in form of anosmia or parosmia while the remainders had complete recovery.

Discussion

COVID 19 clinical picture range from no symptoms to multiple organs failure (Cascella M et al., 2020). Viral infection is the most common cause of permanent smell loss. Smell abnormalities in upper respiratory tract infection caused by many factors. (Butowt et al., 2020). COVID-19 enters the body via cells surfce recepter called angotensins convrting enzym type2 (ACE), that present in cells of airway epithelium, lung tissue, vessels endothelial cells, renal cells, and intestinal cells (Li et al., 2020). Angiotensin converting enzyme 2 receptors bind to a spike S1 glycoproten in the virus coat. Virus was enter to cell by process of endocytoses. The virus need another protein called protease serine 2 (TMPRSS2) that divide the S1 spike glycoprotein, allowing viral envelope fusion to the endosomal region of

Human cell (Hoffmann et al., 2020). Older Studies conclude that corona virus is neuro invasive and neurotropic, that can enter the centrale nervus systems to infectsneural glail cells and it induces a stimulation of immun systems (Desforges et al., 2014). The exect mechanisms of smel abnormalities at COVID_19 was unknown, theories are, First,directs damages of viruses to this olfactoury receptor (Vaira et al., 2020). Second, COVID_19 cause inflamation and damage of sustentacular cells of olfactur epitheliums This epitheliums contain sustintacular cell thats provide nutrition, and homeostasis of sensory neurons leading to smell abnormalities (Brann et al., 2020). Third, mechanical obstruction that prevent odor transmission to the olfactory epithelium caused by mucosal edema and inflammation (Akerlund et al., 1995). In our study we found that 36 %of patients developed smell disturbances. Different results described by many authors. Menni et al. found that smell disturbances founds in 59 % of pcr postive patient compared to 18 % patient with a negatve PCR test (Menni et al., 2020). Varia et al. reported that 14.4% present with smell abnormalities (Vaira et al., 2020). Lechien Et A l. founds thats 85 % of COVID-19 patient pres en with smells abnormalites . Kayee Et Al . reportes smell

abnormalities at 73 % of patient; and an anosmiah is earlly symptoms in 26.7 % (Kaye et al., 2020). Mao et al. reported that loss in smells 5.2 % of COVID-19 patient (Mao Et Al, 2020). Müge Özçelik Korkmaz et al. describe hyposmia/anosmia in 37.9% of patients (Korkmaz et al., 2020). Giacomelli Et Al founds 34% of patiens has loss of smels (Giacomelli et al., 2020). In our study we found that most of those affected patients are above 60 years old but, this disagreed with the results of Yonghyun Lee, who found that smell abnormalities are more common in younger individuals (Lee et al., 2020). Also we found that smell abnormalities are more common in females (58.3%), this agree with results of Yonghyun Lee and Danny Kit Chung Wong (31,32). Also we found that the duration of recovery ranged from 7 to 21 days and median time for recovery was 7 days. This agree with results of Yonghyun Lee (2020) but, disagree with results of Danny Kit Chung Wong in who reported the period of recovery was 7 to 14 days (Wong et al.,2020; Tahmasebi et al., 2021; Shabgah et al., 2021).

Conclusion

Smell abnormalities are common symptoms in COVID-19 patients. It may be the only manifestation of COVID-19. Time for recovery of smell disturbances ranged from 1 to 3 weeks. It is more common in females and older age group.

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