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RESEARCH ARTICLE

ANOSMIA IN COVID-19 INFECTION - A CASE SERIES

Dr. Roshni Mahesh Mohanty[1] and Dr. Anuya Satyaprakash Gupta[2]

1. Senior Resident, Department of E.N.T., Symbiosis Medical College for Women & Symbiosis University Hospital and Research Centre, Symbiosis International (Deemed) University (SIU), Lavale, Pune, Maharashtra, India - 412115.
2. Senior Resident, Department of E.N.T., Symbiosis Medical College for Women & Symbiosis University Hospital and Research Centre, Symbiosis International (Deemed) University (SIU), Lavale, Pune, Maharashtra, India - 412115.

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Abstract

Background:The aim of this study is to highlight anosmia as an important symptom to predict SARS-CoV-2 infection. The presentation of the disease commonly includes fever, cough, weakness, myalgia and breathlessness making anosmia a rare symptom.
Methods:We included a total of 10 patients in the study who were between the age group of 18-70 years with the complaints of anosmia.
Results:8 out of the 10 patients had come with fever and cough initially and developed anosmia later. However, 2 patients had presented to us with anosmia alone as the first symptom and then on further evaluation were found to be COVID-19 positive. The available clinical data was collected, recorded and the results were analyzed.
Conclusion:Anosmia is a rare or late, but contributory symptom of the coronavirus disease. Thus, clinicians should keep in mind the diagnosis of COVID-19 while treating patients presenting with such atypical symptoms for early detection & in-time treatment of COVID 19 infection to prevent complications associated with the disease.

Introduction:-

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a highly infective virus, imposing a great burden on the health of the people across the globe. The pandemic of COVID 19 started in Wuhan, China and spread across the globe with an alarming rise in the number of positive casesin a short time span[1]. The disease has an array of presentations. Some patients infected with the disease may be completely asymptomatic while some present with a mild upper respiratory tract infection whereas some manifest into severe respiratory distress leading to death. Most common symptoms include fever, body ache, generalized weakness, cough, breathlessness and throat irritation. The diagnosis of COVID 19 is confirmed by detection of the viral RNA in the nasopharyngeal or oropharyngeal swabs.

Atypical symptoms like anosmia (loss of smell) and ageusia (loss of taste) have been encountered in a few COVID 19 positive patients but they often go unnoticed as contributory symptoms of COVID 19. These symptoms could in fact be the first clinical presentation of COVID 19 but usually go undetected. Olfactory dysfunction affects the

Corresponding Author:-Dr. Anuya S. Gupta
Address:- Senior Resident, Department of E.N.T., Symbiosis Medical College for Women & Symbiosis University Hospital and Research Centre, Symbiosis International (Deemed) University (SIU), Lavale, Pune, Maharashtra, India - 412115.

quality of life, bringing these patients to the hospital in a state of panic. Thus, a high rate of suspicion is required for early detection of such cases.

Materials and Methods:-

This study was done in a tertiary care hospital admitting and treating COVID-19 positive casesin Pune, India. All patients whose history was taken were well-informed regarding the study. Patients between 18-70 years of age group admitted in the hospital showing mild to moderate symptoms of the disease were included. Patients with history of anosmia, atrophic rhinitis, sino-nasal polyposis, nasal surgery and those with chronic nasal diseases were excluded from the study as all the above factors can contribute to some percentage of anosmia. Out of the 84 patients whose history was taken, 10 patientssuited the criteria of the study, bringing the prevalence in our study to11.9%. Data was collected, recorded and the results were analyzed.

Result:-

We analyzed the data collected from 10 admittedCOVID 19 positive patients. A female preponderance was observed.Out of 10 patients, 6 were female and 4 were male. A total of 11 cases had anosmia but, 1 of them had a history of anosmia due to nasal surgery in the past and hence, was excluded from the study. Out of the 10 patients complaining of anosmia, 2 patients presented with anosmia as the primary complaint and later developed other upper respiratory tract symptoms, while remaining 8 cases developed olfactory dysfunction by the third or fourth day of the disease. 7 patients out of the 10 anosmia cases had an additional complaint of taste dysfunction.As per our government guidelines, all patients were admitted in the hospital for a minimum of 10 days, the first day being the day of sending the oro-nasopharyngeal swab for diagnosis of COVID 19.

Discussion:-

Humans can be infected by seven different types of coronaviruses. These are: Severe Acute Respiratory Syndrome Coronavirus - 2 (SARS-CoV-2), Middle East Respiratory Syndrome Coronavirus (MERS-CoV), Severe Acute Respiratory Syndrome Coronavirus(SARS-CoV), Human Coronavirus - 229E (HCoV-229E), Human Coronavirus - NL63(HCoV-NL63), Human Coronavirus - OC43 (HCoV- OC43) and Human Coronavirus - HKU1 (HCoV-HKU1)[2]. SARS-CoV-2 is a single-stranded RNA coronavirus[3]. Evidence collected by various researchers across the globe suggested that anosmia is now commonly seen as a symptom of COVID 19 which was previously not being associated with the disease. These patients can present with anosmia as the only and primary complaint. However, in some patients, other symptoms like fever, cough, weakness, breathlessness etc. maybe be present before anosmia sets in.

Anosmia can be broadly classified into conductive and sensorineural olfactory loss[4]. Conductive loss is due to impairment of nasal airflow and is reversible when the obstruction clears. Sensorineural loss occurs due to dysfunction of the olfactory epithelium. This can be permanent or have a long recovery period. Several possible mechanisms are suggested for the SARS-CoV-2 causing anosmia alone or in adjunct with other symptoms. The virus infects the nasal olfactory epithelium which can cause injury to a part of or all of the nasal olfactory epithelium. In such patients, recovery begins when the nasal epithelium starts to regenerate[1].

Sungnak et al, in a recent study suggested that viral entry into the nasal cavity may be due to a high Angiotensin Converting - 2 (ACE-2) expression in the nasal epithelial cells in patients affected with the COVID 19 infection[5]. This can cause anosmia to be an atypical symptom of COVID 19. A phylogenetic network analysis of SARS-CoV-2 genomes was conducted by Forster et al. He found three genotypes – A, B and C[6]. In Europeans and Americans, Type A and C are seen significantly. These variants have a high affinity for nasal cavity in humans and thus, a high number of cases of anosmia are seen in the American and European nations. In Asians, Type B is the genotype seen commonly[6]. As the outbreak first took place in Wuhan, China, and there was a rapid progression and spread of the infectioncausing many deaths in a short span of time, olfactory complaints were completely overlooked. But, now the number of patients presenting with anosmia and subsequently with other symptoms has also increased. Thus, we need to be very alert while treating such patients so that their treatment and isolation is started at the earliest to prevent transmission and complications.

Most of the studies concluded that the incidence of anosmia is higher in females than in males[7].These findings are consistent with previous studies related to olfactory dysfunction due to infections of the upper respiratory tract[8]. In

our study also we encountered similar findings of female preponderance. 6 out of 10 cases of anosmia in our study were found to be female and the rest were male.

Various countries across the globe have researched and published studies regarding the prevalence of anosmia in positive SARS-CoV-2 infection cases, ranging from 33.9 to 68%[7]. Study conducted by Klopfenstein et al., concluded that 54 out of 114 cases had anosmia accounting the prevalence to 47%[9]. A study by Mishra et al showed 14.8% prevalence of anosmia in 74 COVID 19 positive cases[10].

Anosmia is often accompanied by taste dysfunction[11]. Anosmia in COVID-19 infection has been associated with better prognosis[12]. It has also been further deduced that a combination of symptoms of anosmia/hyposmia along with ageusia/dysgeusia is associated with reduced risk of death[13]. In the study conducted by us, 7 patientsout of 10 complained of taste dysfunction as well.

The present study included 10 patients. However, studies including larger number of patients are required to understand the exact pathology and the relevance of anosmia in SARS-Cov-2 infections.

Conclusion:-

In conclusion to the study, we would like to emphasize on the fact that clinicians should have a high sense of alertness and suspicion of COVID 19 while evaluating cases presenting withatypical symptoms such as anosmia and ageusia even though they are rare or late symptoms seen in this viral disease. Thesecases could be potential carriers of the virus. Thus, early identification and isolation of such patients will not only help in limiting the progression of the disease but also help in breaking the chain of viral transmission and reducing complications in the patients.

Conflict of Interest:
None declared

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