Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/15309
DOI URL: http://dx.doi.org/10.21474/IJAR01/15309

RESEARCH ARTICLE

CLINICAL SIGNS COMMONLY SEEN ON ENT EXAMINATION OF SYMPTOMATIC ACTIVE COVID-19 PATIENTS IN OUR TERTIARY CARE CENTRE

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Manuscript Info

Manuscript History
Received: 28 June 2022
Final Accepted: 31 July 2022
Published: August 2022

Key words:-
COVID-19, SARS-CoV-2, ENT Clinical Signs, Smell Impairment, Taste Impairment, Hearing Loss

Abstract

Objectives: The study intends to identify various clinical signs on proper ENT examination. This knowledge will help in successfully identifying infected individuals which can be otherwise missed on screening the patient.

Study Design and Setting: This study is a Prospective Cross Sectional Study, a type of an Observational Analytical study. 70 individuals who were admitted in the COVID-19 wards in our Tertiary Care Hospital were subjected to fulfillment of the inclusion and exclusion criteria prepared for this study.

Methods: Participants were chosen based on the selection criteria prepared for the study. After obtaining an informed consent, a proper and safe Otorhinolaryngological examination was performed with all necessary precautionary measures. Data was collected as per the designed clinical proforma.

Results: 80% of the patients had the presence of clinical signs with respect to Otorhinolaryngology. 43 patients had clinical signs on Throat examination, 35 patients had clinical signs on Nasal examination while 9 patients had Ear related clinical signs. The ENT related clinical signs mostly included Nasal mucosa congestion, Posterior Pharyngeal Wall congestion and presence of Granulations in the Posterior Pharyngeal wall. Reduction of Smell and Taste was also elicited on clinical examination. Other clinical signs also included Tonsil enlargement, n/ Tympanic Membrane retractions and decreased hearing on clinical evaluation.

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Conclusion: Knowledge of ENT related clinical signs in COVID 19 patients are important while examining patients in the Out Patient Department or Clinic. Focus on ENT related clinical signs are also as important as symptomology.

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Introduction:-

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was declared a pandemic disease in March 2020 by World Health Organization (WHO) (WHO Director-General's opening remarks at the media briefing on COVID-19, March 2020). Patients present with various general and ENT symptoms. General symptoms include Fever, cough which may be associated with expectoration, headache, diarrhoea, dyspnoea, myalgia, arthralgia, fatigue and in severe cases it progresses to Pneumonia, severe Acute Respiratory Distress Syndrome (ARDS) causing death (Freni F et al, 2020).

Symptoms with respect to Otorhinolaryngology include Sore Throat, nasal obstruction, rhinorrhoea, sneezing, earache, aural fullness, tinnitus and sensorineural hearing loss. Smell and taste impairment is also significantly seen in COVID-19 patients. Beta-coronaviruses, which includes SARS-CoV-2, has the property of neuroinvasiveness and can spread to the Central Nervous System (Freni F et al, 2020). In the ENT region, the important cranial nerves include the Olfactory nerve, the Trigeminal nerve, the Facial nerve and the Vestibulo-cochlear nerve.

Otolaryngologists are one of the high-risk groups for contracting the COVID-19 infection as they are exposed to mucus and aerosolized particles during clinical examination, surgeries or other interventions in the head and neck area (Krajewska J et al, 2020). It has also been seen that many COVID-19 patients have presented with few symptoms or no symptoms at all. This inconsistent presentation of this disease prevents clinical suspicion and delays diagnosis (Sakalli E et al, 2020).

This study intends to identify the common ENT clinical signs in patients with ENT related symptoms in Active COVID-19 patients. The knowledge of the clinical signs commonly seen in this disease will aid in early clinical suspicion especially in patients coming to the Out-Patient Department with minimal symptoms or without any COVID-19 related symptoms. The most effective way in preventing the spread of the disease is by early identification and isolation of infected individuals.

Methods:-

This study was conducted in a Designated COVID-19 Tertiary Care Hospital with active Covid-19 patients. Ethical approval was taken prior to the commencement of the study from the Institutional Ethical Committee in MGM Navi Mumbai. The participants gave informed consent. 70 individuals participated for this study who met the Inclusion and Exclusion criteria of this study.

Inclusion criteria:

1. Confirmed Case of COVID-19 with Real time Reverse Transcription Polymerase Chain Reaction (RT-PCR) positive report.
2. Patients aged 10 to 70 years.
3. Patients belonging to mild and moderate category of the disease at the time of data collection.
4. Well oriented and cooperative patients.

Exclusion criteria:

1. Patients with neurodegenerative diseases.
2. Patients on high flow oxygen therapy with non-invasive ventilation.
3. Patients with olfactory, gustatory, salivary dysfunctions before the pandemic.
4. Patients who are in the intensive-care unit at the time of the data collection.
5. Immunocompromised individuals.

Methodology:-

ENT clinical examination was done for each patient participating in this study in the active phase COVID-19 disease from day 0 to day 5 of RT-PCR positive report. All clinical data will be collected from patients admitted in the COVID wards. This will include-

1. General questions (age, sex, religion)
2. COVID 19 status according to the criteria (Mild/Moderate category)
3. Identifying clinical signs present after proper ENT examination, taking all necessary precautionary measures.
4. Examination of Smell and Taste.

Statistical analysis:

Necessary Statistical tools and Statistical tests are used appropriate analysis of the data. The results are expressed in fractions and percentages with appropriate graphical representation of the attained data.

Results:-

70 patients were selected for this study. The mean age of patients was found to be 50.35 ± 17.41 years (Range 10-70). This study comprised of 37 Males (52.86%) and 33 Females (47.14%) while 35 patients (50%) each belonged to both Mild and Moderate category respectively.

37 patients (19 males, 18 females) had comorbidities (52.86%) while 33 patients (47.14%) did not have any associated comorbidities. The most prevalent associated comorbidities included Hypertension, Diabetes mellitus type 2 and Hypothyroidism. All COVID 19 patients, who satisfied the selection criteria, were clinically examined with all necessary precautions in the active phase of the disease for signs with respect to the field of Otorhinolaryngology during their course in the COVID Wards.

Out of 70 patients, 63 patients (90%) had symptoms pertaining to Otorhinolaryngology while 7 patients (10%) had no ENT related symptoms. 56 patients (80%) had presence of clinical signs with respect to Otorhinolaryngology while 14 patients (20%) had no ENT related clinical signs.

Out of 56 patients who had ENT related clinical signs, 43 patients had Throat related signs including Reduced Taste on examination (76.79%), 35 patients had Nasal signs including Reduced Smell on examination (62.50%) while 9 patients had Ear related signs (16.07%).

The ENT related clinical signs most commonly found in relation to the infection included Nasal mucosa congestion, Posterior Pharyngeal Wall (PPW) congestion, presence of Granulations in the Posterior Pharyngeal wall (PPW), Reduced Smell and Reduced Taste on clinical evaluation. None of the patients in this study had the presence of Facial nerve palsy or the presence of any findings of Neck examination.

Percentage of each Otorhinolaryngology Clinical Signs seen in 56 patients having ENT related Clinical Signs has been described in Table 1 and Figure 1.

Discussion:-

COVID-19 patients present with various ENT related symptoms including disturbances in smell and taste. In this study, we examined the different clinical signs in patients who are in the active phase of the disease.

Mild and moderate category patients were evaluated for ENT related clinical signs. The most common Otorhinolaryngology clinical signs seen in this study were Nasal Mucosa Congestion (28.57%), Posterior Pharyngeal Wall Congestion (28.57%), presence of Granulations in the Posterior Pharyngeal wall (16.07%), Reduced Smell (41.07%) and Reduced Taste (53.57%) on clinical evaluation.

Mohammad Waheed El-Anwar had reviewed various published literature for ENT related manifestations and found that in 1773 COVID-19 positive patients, 5.3% had pharyngeal erythema, 4.1% had nasal congestion and 1.3% had tonsil enlargement in relation to the disease (El-Anwar MW et al, 2020).

In a meta-analysis conducted by Tong et al, it was concluded that the frequency of Smell and Taste Loss in COVID-19 patient was 52.73% (29.64%-75.23%) for Olfactory dysfunction in ten studies and 43.93% (20.46%-68.95%) for

Gustatory dysfunction in nine studies (Tong JY et al, 2020). In a study on smell and taste disorders done in Milan, 33.9% of patients were found to have either taste or smell impairment while 18.6% of patients had both smell and taste impairment (Giacomelli A et al, 2020). Yan C. et al have noted in their study that 68% and 71% of patients have altered smell and altered taste (Yan CH et al, 2020).

The mechanisms of Olfactory and Gustatory impairment in COVID-19 patients are considered to be attributed to entry of SARS-CoV-2 through the olfactory cells and the interaction of the virus spike protein with the ACE-2 protein on nasal epithelium (Brann DH et al, 2020). The infection of neuronal olfactory receptor is followed by anterograde transport and diffusion of virus to the olfactory bulb and further to the Central Nervous System (Van Riel D et al, 2015).

In this study, 16.07% had Ear related clinical signs which included Tympanic Membrane (TM) retraction/Dull TM, Negative Rinne's Test and Reduced Absolute Bone Conduction (ABC) test on tuning fork examination. 10.71% of the patients had Tympanic Membrane (TM) retraction/Dull TM while 3.57% showed Negative Rinne's Test suggestive of Conductive Hearing Loss (CHL). 5.36% of the patients had Reduced Absolute Bone Conduction (ABC) test on tuning fork examination. Francesco Freni and others showed in their study that SARS-CoV-2 virus can have deleterious effect on the cochlear hair cells (Freni F et al, 2020).

In this study, 62.50% had Nose related clinical signs which included Nasal Mucosa congestion, Inferior Turbinate Hypertrophy and Reduced Smell on examination while 76.79% had Throat related clinical signs which included Posterior Pharyngeal Wall (PPW) congestion, PPW granulations and Enlarged Tonsils. No significant neck findings and no evidence of facial weakness or palsy was seen in COVID-19 patients in this study. However, Yihui Goh and others mentioned that neurological manifestations exist in COVID-19 patients which include facial paralysis (Goh Y et al, 2020).

Conclusion:-

The knowledge of the possible clinical signs in COVID-19 patients will help in clinically identifying the probable suspects of COVID-19 disease. This is particularly important for pauci-symptomatic and asymptomatic individuals who attend the Out Patient Department or planned for interventional procedures and surgeries. Thus, following all strict precautionary measures and screening protocols will help in successfully isolating infected individuals. This will contribute in breaking the chain of transmission of the virus.

Acknowledgements:-

Sincere thanks to the Dean, Hospital Director and all other hospital staff. They have been very supportive for smooth conduction of the study and also ensured that all precautionary measures are provided and followed as per rules and regulations. We thank all patients for their cooperation, participation and understanding in order to achieve the objective of the study.

Table 1:- Otorhinolaryngology Clinical Signs evaluated in Active COVID-19 patients.

ENT CLINICAL SIGNS	NUMBER (PERCENTAGE)
THROAT RELATED SIGNS	43 (76.79%)
NOSE RELATED SIGNS	35 (62.50%)
EAR RELATED SIGNS	9 (16.07%)

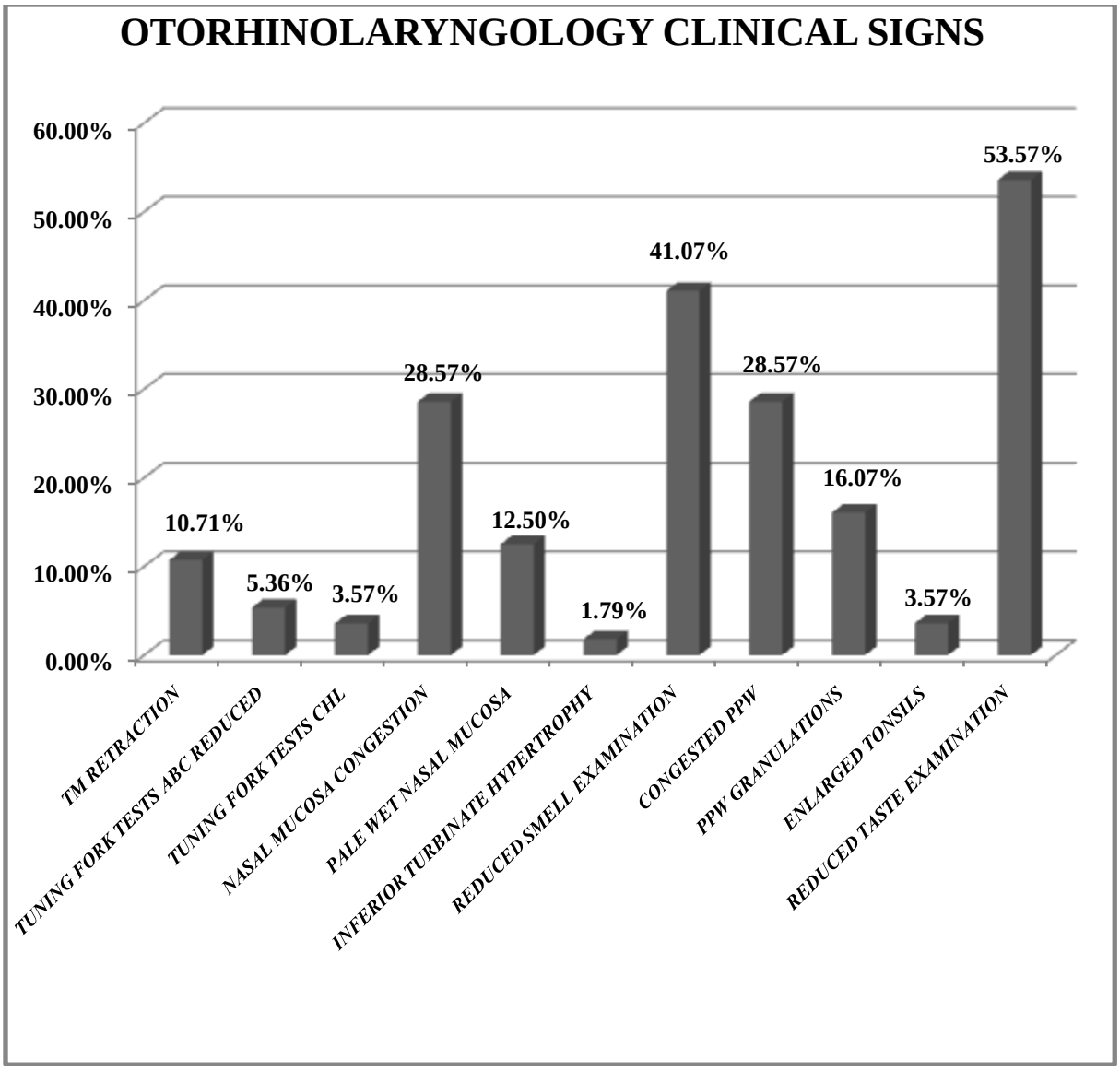

Figure 1:- Otorhinolaryngology Clinical Signs commonly observed in Active COVID-19 patients.

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