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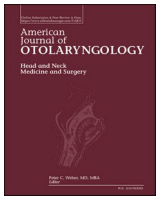

Increased incidence of otitis externa in covid-19 patients

Ossama M. Mady [a,*], Hala S. El-Ozairy [b], Eman M. Wady [a,c]

[a] Otorhinolaryngology, Faculty of Medicine, Ain Shams University, Abassia, Cairo, Egypt
[b] ICU and Pain Management, Faculty of Medicine, Ain Shams University, Abassia, Cairo, Egypt
[c] Ain Shams General Hospital, Cairo, Egypt

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ABSTRACT

Objective: The current study showed the relation between otitis externa and COVID-19 infection and compared otitis externa with other symptoms of COVID-19 as anosmia.
Methods: 257 cases who were confirmed positive for COVID-19, were examined otoscopic and endoscopic for otitis externa, onset of starting symptoms of otitis externa and its relation to days of infection with COVID-19 were documented and the prevalence of otitis externa with anosmia in the study group were estimated.
Results: Increased incidence of otitis externa in COVID-19 patients (18% of study group) and symptoms starting mainly between the 5th to 8th day of COVID-19 infection. Combined otitis externa and anosmia occurred in 13% of study group.
Conclusions: Otitis externa has a relation to COVID-19 infection. Further research needed to study its pathogenesis and mechanisms.

1. Introduction

Corona viruses were first diagnosed in 1969 by group of viruses causing respiratory distress [1]. Outbreaks of corona viruses occurred at the end of 2019 (COVID-19), started in Wuhan -China then spread and become pandemic [2].

The clinical manifestations of COVID-19 are fever, cough, respiratory distress, headache, fatigue, sore throat, rhinorrhea and GIT symptoms [3].

Anosmia and ageusia were reported in COVID-19 patients and its proportion was about 15%, and most patients with these symptoms improved within 3 weeks [4], anosmia in most patients not accompanied by nasal obstruction or other nasal symptoms, so it may be due to direct damage of olfactory mucosa by viruses [5].

Otitis externa is inflammation of external auditory canal, characterized by otalgia, its annual incidence is 1% in UK and lifetime prevalence is 10% [6].

2. Materials and methods

2.1. Study participants

257 patients positive for COVID-19 (by PCR) were included in our study. Consent to participate in our study was provided from all patients. All patients were examined at least once (otoscopic and endoscopic examination) and then contacted by telephone two times to complete our study. Ear examination in hospitalized patients was done at least twice.

2.2. Study design

Cross-sectional study of patients with COVID-19, data was collected as age, sex, smoking history, associated anosmia, loss of taste, fever, cough, GIT symptom, otalgia and signs of otitis externa e.g. diffuse edema of external auditory canal. We consider the patient positive for otitis externa when both symptoms and signs of otitis externa are present.

2.3. Exclusion criteria

1. Patients with diabetes mellites, cancers, end stage renal disease.
2. Patients with recent history of otitis externa in the last two months.

3. Results

Our study include 257 patients positive for COVID-19, their age

* Corresponding author at: 62 c Gardenia Heights 3, 5th Settlement, New Cairo 11566, Egypt.
E-mail address: omady84@med.asu.edu.eg.com (O.M. Mady).

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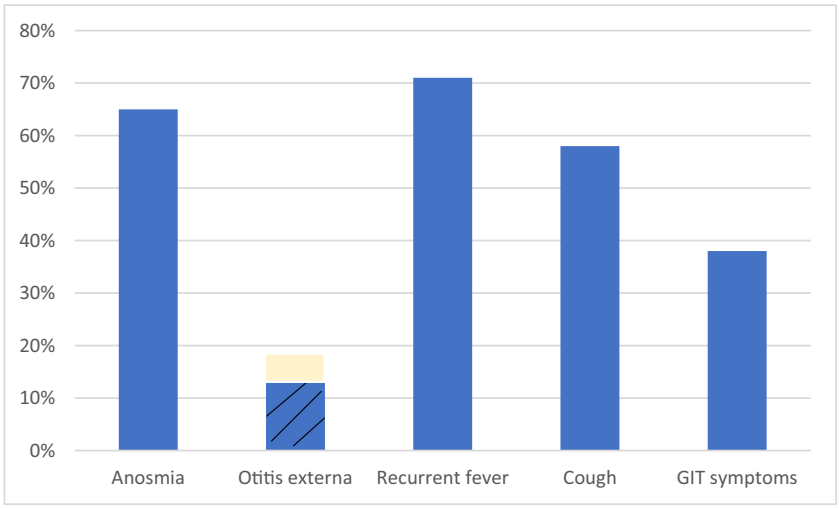

Fig. 1. Showing the percentage of different complains among study group.
Otitis externa without anosmia.
Otitis externa with anosmia.

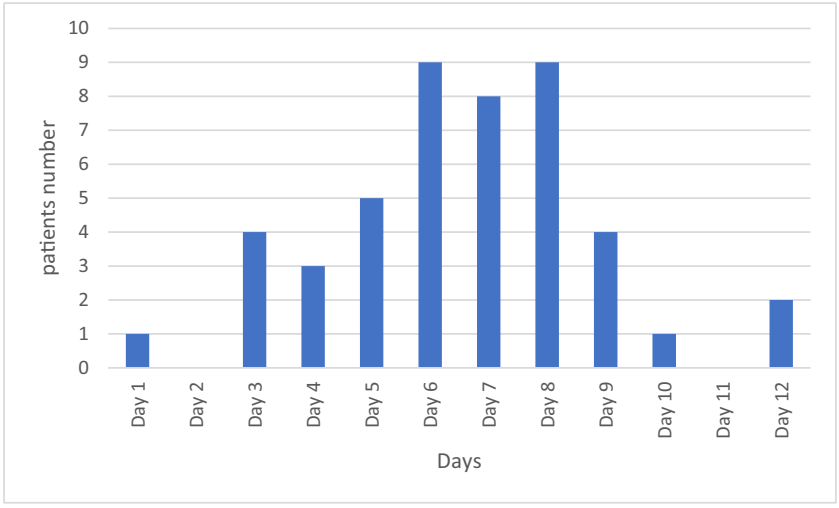

Fig. 2. Showing distribution of cases of otitis externa through days of COVID-19 infection.

ranged between 23 and 65 years (163 males 63.5% and 94 females 36.5%) were recruited, 43 patients (16.7% were smokers).

Varies symptoms of COVID-19 were detected and examination was done.

The percentage of anosmia was 65% (167 patients) and recurrent fever was 71% (182 patients). Regarding cough, its percentage was 58% (149 patients), the prevalence of GIT symptoms in our patients was 38% (98 patients).

Of the 257 patients, 46 patients (18%) were complaining of otalgia and otitis externa by examination.

Then we checked for correlation between otitis externa and anosmia and the results were 33 patients of 46 patients with otitis externa were complaining also from anosmia (13% of all study group complaining of anosmia and otitis externa which equal 19.7% from anosmia patients in our group) and 13 patients of 33 patients with otitis externa were not complaining of anosmia (5% of all study group complaining of otitis externa without anosmia).

The percentage of different complains among study group were illustrated in Fig. 1.

Regarding onset and starting symptoms of otitis externa in contrast to days of COVID-19 infection, otitis externa occurred in the first day of infection with COVID-19 in one patient, most of cases of otitis externa (67%) appeared between the 5th to 8th day of COVID-19 infection.

Distribution of cases of otitis externa through days of COVID-19 infection was illustrated in Fig. 2.

4. Discussion

The pandemic caused by COVID-19 affecting lives of patients and health care providers all over the world, its clinical picture is dynamic with wide spectrum symptoms. The more positive cases we see, the more new symptoms appear.

Olfactory dysfunction and ageusia now become a part of clinical picture of COVID-19, by retrospective studies from Wuhan (origin of outbreak of COVID-19) the incidence of olfactory dysfunction in 3 hospital centers was 5.1% [7] and in a multicenter European study olfactory dysfunction of COVID-19 was 85.6% [8]. According to our results anosmia present in 65% of patients.

To our knowledge this study is the first to show the association between otitis externa and COVID-19 infection.

Recent studies suggest that the polymorphic clinical manifestation may due to different variants of COVID-19 viruses [8]. ACE2 receptors (which were considered as functional receptors for covid viruses) distribution responsible for clinical picture of viruses [9].

Otitis externa in our study was 18% which is higher than its incidence and prevalence in non covid patients (1% and 10% respectively according to Schaefer and Baugh [6]) that indicate the increased incidence of otitis externa in COVID-19 patients.

The pathogenesis of otitis externa in COVID-19 patients is unknown and it may be due to immune complex mediated like otitis externa with immunological diseases, there is another explanation may be due to presence of ACE2 in the skin so further research in this point is needed.

ACE2 was present in epidermis of the skin, basal cell layer of hair follicles and smooth muscle cells around the sebaceous glands [10].

Limitations of our study was first, only 257 patients were studied second, all patients from two centers in the same country. Also there was potential selection bias, as the patients already suffering ear ache are more likely to consent or report symptoms. In addition, severely ill COVID-19 patients, especially those who were mechanically ventilated, were not able to consent and hence were not examined.

Clinical picture of COVID-19 is wide spectrum so we should be careful during examination of any patients with any complain during the pandemic to protect our self.

5. Conclusions

Otitis externa increased in patients with COVID-19 and Further research needed to study its pathogenesis and mechanisms.

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Declaration of competing interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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