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ENT manifestations of COVID-19 cases in Puerto Rico, 2020-2021

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INTRODUCTION

Ear, Nose, and Throat (ENT) manifestations related to infections caused by SARS-CoV-2 have been reported worldwide, including headache, anosmia and dysgeusia, tinnitus, voice changes, sore throat, and nasal congestion. Also, besides their impact on the quality of life for acutely ill patients, otorhinolaryngological manifestations have been reported as part of the long-term or lingering effects of the disease, known as "Long COVID". To facilitate the research on the impact of these manifestations, a baseline from acutely ill patients must be established.

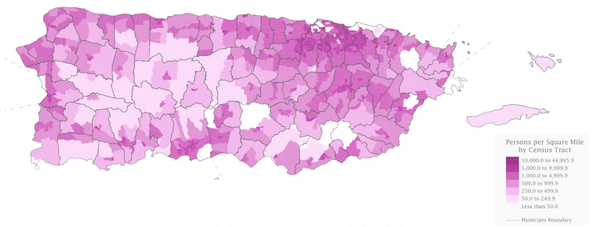
In Puerto Rico, a robust surveillance system known as the Municipal Case Investigation and Contact Tracing System collected information from all cases and published weekly data on clinical manifestations. However, a focused analysis to describe the otolaryngology manifestations associated with COVID-19 cases has not been done.

The objective of this study is to provide the first description and analysis of the ENT manifestations of COVID-19 cases in Puerto Rico during the first year of the pandemic.

METHODS

Study design: Cross-sectional
Database: BioPortal, the Municipal Case Investigation and Contact Tracing System for the COVID-19 in Puerto Rico (SMICRC), PR Department of Health. The data includes non-identifiable demographic and epidemiological information. **IRB:** 2022-29
Population: All confirmed positive and antigen-positive COVID-19 cases reported by public and private laboratories in Puerto Rico. Population of Puerto Rico: 3.2 Million.

Source: US Census Bureau



Period: July 1, 2020, and June 30, 2021.
Analysis: Statistical software (R and Excel) was used to calculate the frequency and prevalence of variables of interest.

RESULTS EPIDEMIOLOGIC PROFILE

Study Period: July 1, 2020 to June 30, 2021
Total of PCR Confirmed Cases and Antigen: 140,944

Figure 1. Epi curve of COVID-19 cases in Puerto Rico by time of interview after report.

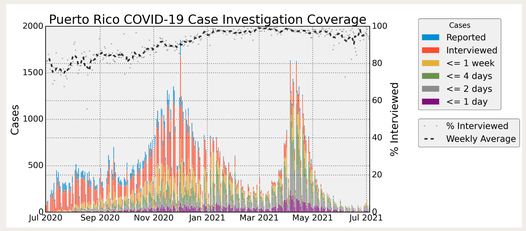
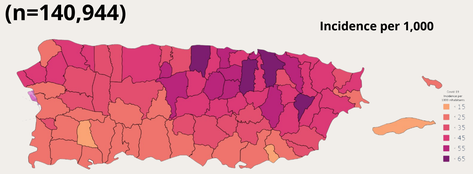


Figure 2. Geographical distribution of COVID-19 cases in Puerto Rico.

(n=140,944)

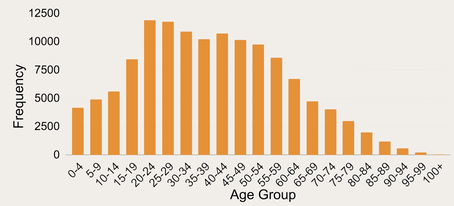


SEX (n=127,790)

♀ 53% ♂ 47%

(n=128,562)

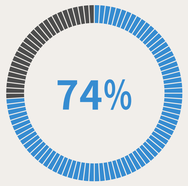
Figure 3. Age group distribution of COVID-19 cases in Puerto Rico.



The frequency of headache was consistent throughout the year, being the most common symptom of COVID-19 cases in Puerto Rico.

RESULTS CLINICAL MANIFESTATIONS

PERCENTAGE OF SYMPTOMATIC CASES



TOP 10 SYMPTOMS (n=71,066)

- **Headache** 50.8%
- **Cough** 47%
- **Nasal Congestion** 45.7%
- **Myalgia** 45.1%
- **Fever** 43.1%
- **Anosmia/Dysgeusia** 41.3%
- **Fatigue** 41%
- **Chills** 27.2%
- **Diarrhea** 21.9%
- **Sore Throat** 19.9%

Figure 4. Frequency of ENT Manifestations in Puerto Rico, July 2020 to June 2021

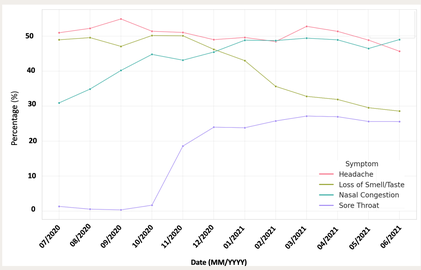
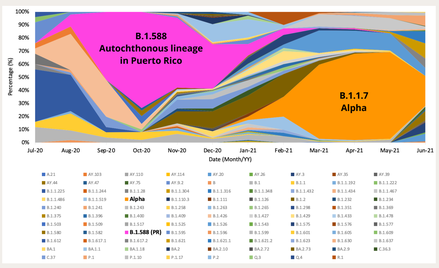


Figure 5. Distribution of SARS-CoV-2 variants in Puerto Rico, July 2020 to June 2021



ENT manifestations have interesting monthly variations. Anosmia/Dysgeusia shows a significant increase towards the end of 2020 but stabilizes in 2021. Nasal Congestion shows a noticeable peak towards the end of 2020 and remains relatively stable in 2021. Sore Throat begins with a higher prevalence but sees a decline over time, especially starting from the end of 2020.

CONCLUSIONS

Our study provides the first epidemiological profile of otolaryngological (ENT) manifestations in COVID-19 cases from Puerto Rico. This foundational work sets the stage for future scientific inquiries into how the clinical profile evolves over time and its long-term consequences.

Understanding the temporal variations in ENT symptoms within a population is crucial. This can help in correlating with other epidemiological variables, such as the emergence of new SARS-CoV-2 variants and changes in the population's immunity status. In Puerto Rico, for instance, an increased frequency of sore throat and a decreased incidence of loss of smell/taste may be attributed to the presence of the B.1.588 variant, a lineage specific to Puerto Rico.

For research on long-term COVID-19 effects, establishing a baseline prevalence of acute symptoms is essential. Anosmia (loss of smell) and dysgeusia (loss of taste) are among the most commonly reported COVID-19 symptoms. While many patients regain their olfactory and gustatory senses within weeks, about 10% still experience these issues a year later, significantly impacting their quality of life. In Puerto Rico, 41.3% of COVID-19 cases reported symptoms of anosmia and dysgeusia during the first year.

To deepen our understanding of an evolving disease like COVID-19, it's imperative that future surveillance systems encompass a broader range of clinical manifestations, including tinnitus, voice changes, and hearing loss. This initial documentation of the ENT clinical profile of COVID-19 in Puerto Rico underscores the importance of continued research in this field, aiming to enhance the quality of life for affected individuals.

ACKNOWLEDGMENTS

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