Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Am J Otolaryngol 41 (2020) 102577

Contents lists available at ScienceDirect

Am J Otolaryngol

journal homepage: www.elsevier.com/locate/amjoto

COVID-19 sampling from the middle ear and mastoid: A case report

George B. Wanna[a,b], Zachary G. Schwam[a,b,*], Vivian F. Kaul[a,b], Maura K. Cosetti[a,b], Enrique Perez[a,b], Peter Filip[a,b], Waleed Javaid[d], Avi Kandel[c], Alberto Paniz-Mondolfi[c], Satish Govindaraj[a,b], Eric M. Genden[a,b]

[a] Icahn School of Medicine at Mount Sinai, Department of Otolaryngology-Head and Neck Surgery, United States of America
[b] New York Eye and Ear Infirmary of Mount Sinai, Department of Otolaryngology-Head and Neck Surgery, United States of America
[c] Icahn School of Medicine at Mount Sinai, Department of Pathology, United States of America
[d] Icahn School of Medicine, Department of Infectious Diseases

ARTICLE INFO

Keywords:
Coronavirus
COVID-19
Middle ear
Cholesteatoma

1. Introduction

Herein we report the case of a recently hospitalized COVID-19-positive patient with a previous history of canal-wall-down mastoidectomy for cholesteatoma who required mastoid cavity debridement. Five weeks after symptom onset and four weeks after discharge from our health system, her mastoid cavity was debrided and COVID-19 testing from her nasopharynx, middle ear, and mastoid was performed.

2. Case report

Our patient is a 54 year-old female who had presented to the emergency department in New York City in late March with fever, cough, and shortness of breath. She was admitted to the hospital with multifocal pneumonia and was found to be positive for COVID-19 by nasopharyngeal reverse-transcriptase polymerase chain reaction (RT-PCR). As per our health system protocol, she completed five-day courses of azithromycin and hydroxychloroquine. Six days later, the patient was discharged home on room air. Shortly thereafter she presented to the emergency department, this time with severe left-sided otalgia, aural fullness, and purulent otorrhea. A chest x-ray demonstrated that her pneumonia had resolved. Utilizing video telehealth, she was instructed to start ofloxacin otic suspension twice daily, with directions to come to the office if symptoms did not improve. This was done out of an abundance of caution for the office staff; additionally, our office was also considered a “COVID-free” site within the health system. After what we felt to be a sufficient time had passed and the patient was clinically asymptomatic from pneumonia, we examined the patient, swabbing not only her nasopharyngeal mucosa, but also her middle ear mucosa. We biopsied her mastoid cholesteatoma matrix. The samples were analyzed side-by-side via the Genmark ePlex® (Carlsbad, California) [1] and Roche Cobas 6800 (Basel, Switzerland) [2] SARS-CoV-2 testing platforms and were found to both be negative. These two assays have different targets, with the Genmark assay examining the presence of nucleocapsid regions N1–3 and the Roche assay interrogating for the presence of ORF1/a, a non-structural region unique to the specific coronavirus, and a conserved envelope protein present in all sarbecovirus variants.

3. Discussion

While we present data from a single patient, this is the first known report of COVID-19 testing from the middle ear and mastoid. Due to the patient's postsurgical mastoid cavity, this tissue was readily available for sampling. We found concordance between the middle ear, mastoid, and nasopharyngeal specimens across two testing platforms at a single point in time. While certainly informative for the otolaryngology community, pediatricians, internists, emergency room physicians, and audiologists stand to benefit. More investigation is needed prior to making definitive recommendations on middle ear/mastoid manipulation in the COVID-19-positive patient.

* Corresponding author at: 1 Gustave L. Levy Place, Box 1189, New York, NY 10003, United States of America.
E-mail address: Zachary.schwam@mountsinai.org (Z.G. Schwam).

https://doi.org/10.1016/j.amjoto.2020.102577
Received 11 May 2020

4. Conclusion

There was concordance between middle ear, mastoid, and nasopharyngeal specimens across two testing platforms in this previously COVID-19-positive patient.

Meeting information

None.

Funding

None.

Declaration of competing interest

None.

References

[1] GenmarkDx. ePlex® SARS-CoV-2 test assay manual. https://www.fda.gov/media/136282/download, Accessed date: 4 May 2020.
[2] cobas. Cobas® SARS-CoV-2. https://www.fda.gov/media/136049/download, Accessed date: 4 May 2020.