

# SARS-CoV-2 Presence in Cerumen

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## Abstract

The emergence of a new coronavirus strain (SARS-CoV-2) in December 2019 from China led to a global pandemic. The lack of herd immunity against this virus and the possibility of viral spread from asymptomatic individuals is still a major challenge for the prevention of viral transmission. The studies of Islamoglu and Hanege evaluated the presence of the virus in different bodily secretions (Cerumen) as a potential source of viral spread among patients infected with SARS-CoV-2. We would like to comment on these 2 studies.

## Keywords

SARS-CoV-2, COVID-19, cerumen, otolaryngology

We have read the article of Islamoglu et al with great interest.<sup>1</sup> The authors examined the ears of 825 consecutive patients with a diagnosis of COVID-19 confirmed by a positive polymerase chain reaction (PCR) test result of the nasopharyngeal–oropharyngeal swab samples. They collected cerumen samples from 60 patients who had relatively higher amounts of cerumen bilaterally and isolated RNA from these samples with a rapid RNA isolation method. They tested the samples with reverse transcription polymerase chain reaction and concluded that SARS-CoV-2 genome was not detected in these samples.

We published a recent study on the saliva, tear, and cerumen samples of COVID-19 patients with positive nasopharyngeal–oropharyngeal swab PCR test results.<sup>2</sup> In this study, cerumen samples were collected from 38 consecutive COVID-19 patients without selecting cases for the amount of cerumen and SARS-CoV-2 genome could be detected in 39.5% of the tested cerumen samples from these patients.

In both studies, the cerumen samples were collected within 24 hours of the positive nasopharyngeal–oropharyngeal swab sample test result, and there was no delay in sample collection. However, the second study preferred spin column method for RNA isolation,<sup>2</sup> which is known to have a more concentrated and pure RNA yield.<sup>3</sup> The second study also demonstrated that the viral load was significantly lower in cerumen samples compared to the saliva and tear samples and it was harder to detect.<sup>2</sup> Therefore, high-yield RNA isolation kits may be a better choice

for the detection of this virus in cerumen. In the first study, patients with bilateral higher amounts of cerumen were selected. The presence of high amount of cerumen may indicate a delay in the outflow of cerumen. Therefore, this cerumen content might have been secreted long before the COVID-19 infection and did not contain detectable amounts of the SARS-CoV-2 virus.

In conclusion, Hanege et al demonstrated the presence of SARS-CoV-2 in freshly secreted cerumen, while Islamoglu et al suggested the absence of the viral genome in accumulated samples of cerumen. Some of our colleagues speculated that the virus may contaminate cerumen via air or from nearby

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secretions and accumulate there to give false-positive results. The patients in the study by Islamoglu et al had higher cerumen content and were more prone to contamination due to its size. However, no virus was detected in these samples. The combined analysis of these 2 studies support the hypothesis that SARS-CoV-2 was present in the secretions of the ceruminous glands at the time of secretion and was not an external contamination. Further work is needed to better understand the pathophysiological effects of this virus in the ears, as ear involvement was also clinically suggested in some patients with COVID-19.<sup>4</sup>

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