Letters

COMMENT & RESPONSE

Sudden Sensorineural Hearing Loss and COVID-19 Vaccination Revisited—An Ongoing Conversation

To the Editor  Widespread vaccination against SARS-CoV-2 is critical in turning the tide on the COVID-19 pandemic, but achieving widespread acceptance has proven elusive. Fear of adverse effects has been a recurring theme in surveys of the public vaccination hesitancy. Therefore, studies investigating the incidence of sudden sensorineural hearing loss (SSNHL) after COVID-19 vaccination garner intense interest. Whereas Formeister and colleagues\(^1\) find no association between COVID-19 vaccination and incidence of hearing loss in their cross-sectional analysis, Yanir et al\(^2\) identify a possible association but with very small effect size and without consistent demographic groups. Ulrich and colleagues\(^3\) conclude that the benefits of COVID-19 vaccination exceed the possible cost of rare instances of SSNHL. Analyses involving large data sets often uncover statistically significant differences that are not necessarily clinically meaningful, and spurious associations can arise owing to chance or bias.

Given the intense scrutiny of potential risk of COVID-19 vaccination to hearing, what about possible protection from hearing loss if vaccinated? There is strong evidence that viruses can cause idiopathic SSNHL; proposed mechanisms include direct viral damage to inner ear structures and immune-mediated injury.\(^4\) The immune response to infection can disrupt coagulation and fibrinolytic pathways, predisposing the patient to microthrombi or microhemorrhage.\(^4\) Direct SARS-CoV-2 infection of the human inner ear may underlie COVID-19-associated audiovestibular dysfunction.\(^4,5\) Preventing hearing loss is a foremost priority. Effective preventive measures to reduce the incidence and severity of hearing loss include ensuring immunization along with reducing other ototoxic exposures. Whether COVID-19 vaccination might reduce risk of SARS-CoV-2-related hearing loss is an open question.

Evidence from randomized trials and epidemiological data\(^6\) suggest the receipt of COVID-19 vaccines is associated with reduction in severe COVID-19 illness and death. Investigations into possible association of COVID-19 vaccines with SSNHL rely on data from passive reporting and retrospective comparisons using administrative data that are susceptible to many biases. As a result, any potential association involves uncertainty regarding diagnosis, causation, and possible confounders. Concern around rare reports of SSNHL should not prompt deferral of vaccination. In addition to preventing critical illness and mortality, vaccination could have a role in preventing viral-induced SSNHL. Even if a link between SSNHL and vaccination can be corroborated, sociodemographic predictors of risk, severity, and response to therapy are still needed.

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