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Impaired hearing following SARS-CoV-2 vaccinations ☆

Letter to the Editor

We appreciated reading the article by Jeong et al. regarding 3 patients developing sensorineural hearing loss (SNHL) 3–16 days after the second Astra Zeneca vaccine (case-1), and after the first (case-2) and second Pfizer vaccine (case-3) (Table 1) [Jeong et al. 2021]. Only 2 patients benefited from steroids. In case-3, SNHL deteriorated under treatment [Jeong et al. 2021]. The study is appealing but raises concerns.

We disagree that SNHL is a rare adverse reaction to SARS-CoV-2 vaccines (Jeong and Choi, 2021). Searching the literature revealed that at least 1178 cases with SNHL following a SARS-CoV-2 vaccination have been reported (Table 1). The figure does not include self-reports on the Vaccine Adverse Event Reporting System platform. In the majority of cases, SNHL occurred after the first jab. Most frequently, SNHL occurred in association with the Astra Zeneca vaccine.

The authors propose that the viral infection could have been the cause of SNHL, but they do not provide evidence that supports this assumption (Jeong and Choi, 2021). Since it is well appreciated that SARS-CoV-2 vaccinations can cause thrombosis or autoimmune disease, including vasculitis or thrombocytopenia, these other mechanisms should be considered as they are more likely responsible for SNHL than a direct viral attack after SARS-CoV-2 vaccination. It is also conceivable that SNHL is due to mononeuritis of cranial nerve VIII. Mono/polyneuritis of cranial nerves have been repeatedly reported in SARS-CoV-2 infected or vaccinated subjects (Finsterer et al. 2021a) and may or may occur with simultaneous affection of the peripheral nerves (Finsterer et al. 2021b). Additionally, it has been reported that SARS-CoV-2 vaccination can trigger autoimmune disease such as radiculitis. An argument for an immunogenic mechanism of SNHL is that in at least 2 of the index cases a beneficial response to steroids was reported. How can viral infection cause SNHL, as reported in the abstract, when no virus is injected by the vaccination?

Unfortunately, the case descriptions of the 3 patients do not provide information if symptoms in addition to SNHL, such as tinnitus, vertigo, dizziness or aural fullness, were noted. Knowing

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Table 1
Reported patients with SNHL following a SARS-CoV-2 vaccination

Age	Sex	VT	LVO (days)	Side	TR	OC	Reference
Individual patients							
64	f	1. AZV	3	right	prednisolone	CR	(Jeong and Choi, 2021)
42	m	1. BPV	0	bil	prednisolone	IR	(Jeong and Choi, 2021)
18	m	2. BPV	16	right	prednisolone	DT	(Jeong and Choi, 2021)
74	f	1. MOD	7	bil	nr	nr	(Wichova et al., 2021)
71	m	1.+2. MOD	2-3	right	nr	nr	(Wichova et al., 2021)
53	f	1. BPV	10	bil	nr	nr	(Wichova et al., 2021)
51	m	1. BPV	14	right	nr	nr	(Wichova et al., 2021)
83	m	2. MOD	10	left	nr	nr	(Wichova et al., 2021)
77	f	2. MID	30	left	nr	nr	(Wichova et al., 2021)
69	m	1. BPV	7	left	nr	nr	(Wichova et al., 2021)
67	f	1.+2. BPV	I	right	nr	nr	(Wichova et al., 2021)
60	m	2. BPV	7-14	left	nr	nr	(Wichova et al., 2021)
55	m	1. BPV	10-14	right	nr	nr	(Wichova et al., 2021)
54	f	2. MOD	10-21	left	nr	nr	(Wichova et al., 2021)
49	m	1. MOD	4-5	right	nr	nr	(Wichova et al., 2021)
43	m	1. MOD	14	right	nr	nr	(Wichova et al., 2021)
86	m	2. BPV	42	right	nr	nr	(Wichova et al., 2021)
78	f	2. BPV	1-2	roght	nr	nr	(Wichova et al., 2021)
76	m	2. MOD	14	left	mr	mr	(Wichova et al., 2021)
67	m	2. MOD	7	left	nr	nr	(Wichova et al., 2021)
66	f	1. BPV	7-10	left	mr	mr	(Wichova et al., 2021)
64	m	2. MOD	7-10	left	nr	nr	(Wichova et al., 2021)
61	f	1. BPV	12	right	nr	nr	(Wichova et al., 2021)
59	m	1. MOD	6	rgith	nr	nr	(Wichova et al., 2021)
58	f	1. BPV	10	bil	nr	nr	(Wichova et al., 2021)
51	f	1.+2. MOD	21	right	nr	nr	(Wichova et al., 2021)
48	m	1. MOD	2-3	left	nr	nr	(Wichova et al., 2021)
39	m	1. MOD	10-14	right	nr	nr	(Wichova et al., 2021)
61	f	2. AZV	2	right	steroids, ASS	CR	(Tsetsos et al., 2021)

(*continued on next page*)

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Table 1 (*continued*)

Age	Sex	VT	LVO (days)	Side	TR	OC	Reference
Retrospective cohort studies							
N=71	nr	BPV	nr	nr	nr	nr	[AIFA 2021]
N=10	nr	MOD	nr	nr	nr	nr	[AUFA 2021]
N=25	nr	AZV	nr	nr	nr	nr	[AIFA 2021]
N=355	nr	BPV	nr	nr	nr	nr	(MHRA., 2021)
N=24	nr	MOD	nr	nr	nr	nr	(MHRA., 2021)
N=724	nr	AZV	nr	nr	nr	nr	[(MHRA., 2021)
N=28	nr	BPV	0-21	nr	nr	nr	(Formeister et al., 2021)
N=12	nr	MOD	0-21	nr	nr	nr	(Formeister et al., 2021)

ASS: acetyl-salicylic acid, AZV: Astra Zeneca vaccine, BPV: Biontech Pfizer vaccine, CR: complete recovery, DT. Deterioration, IR: incomplete recovery, LVO: latency between vaccination and onset of SNHL in days, MOD: Moderna vaccine, nr: not reported, OC: outcome, TR: treatment, VT: type of vaccine,

these details and investigating the patients for side effects other than SNHL is crucial for the treatment choice and assessing patient outcomes.

Overall, this interesting study has several limitations which challenge the results and their interpretation. SNHL is not infrequent, and the mechanism responsible for SNHL after a SARS-CoV-2 vaccination is rather immunogenic than infectious.

Declarations

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Consent for Publication: not applicable

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