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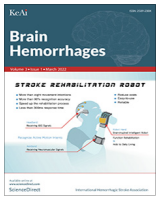

Spot the adenoma after pituitary apoplexy following a SARS-CoV-2 vaccination

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ABSTRACT

Pituitary apoplexy often manifests with a severe headache and is often caused by bleeding in a pituitary adenoma, which is common and often undiagnosed. The pituitary gland is damaged when the tumour suddenly enlarges due to bleeding. Bleeding into the pituitary can block blood supply to the pituitary gland. The larger the tumour, the higher the risk of a future pituitary apoplexy. Since only few cases have been reported, the SARS-CoV-2 vaccine is unlikely to cause pituitary apoplexy. Patients with new-type headache require neurological evaluation and may require cerebral imaging to rule out bleeding, ischemia, venous sinus thrombosis, meningitis, encephalitis, pituitary apoplexy, reversible cerebral vasoconstriction syndrome, dissection, or migraine.

Letter to the editor

We read with interest the article by Roncati et al. about a 28 years-old female who developed previously unknown tension-type headache for one month after the first dose of the Vaxzevira vaccine, of which the cause was not identified.[1] Two months after the first dose, she received the second dose and headache came back, but more intense than after the first dose and in association with amenorrhoea and hyperprolactinemia.[1] Serial MRIs revealed pituitary apoplexy, that partially resolved after three months.[1] The study is appealing but raises concerns that should be discussed.

Apoplexy is commonly associated with classical cardio-vascular risk factors for stroke or embolism. Therefore, we should know if the index patient had diabetes, arterial hypertension, hyperlipidemia, or atrial fibrillation, even in the absence of a previously uneventful history. Furthermore, we should know if the patient was taking an anti-contraceptive pill or if she was a smoker. Providing this information is crucial as the combination of both or either of the two can promote thrombosis.

Because pituitary apoplexy after SARS-CoV-2 infection is commonly associated with pituitary adenoma,[2] we should be told if the index patient had micro-adenoma or macro-adenoma of the pituitary gland as well. Knowing this information is crucial as it may determine the therapeutic regimen significantly. Pituitary apoplexy plus pituitary adenoma may require endoscopic transnasal resection. Pituitary apoplexy is usually caused by bleeding inside a pituitary adenoma, which is common and often undiagnosed. The pituitary gland is damaged when the tumour suddenly enlarges due to bleeding. It either bleeds into the pituitary or blocks blood supply to the pituitary. The larger the tumour, the higher the risk for future pituitary apoplexy.

Although pituitary apoplexy has been repeatedly reported in patients with SARS-CoV-2 infection,[3] it has been only rarely reported as a complication of anti-SARS-CoV-2 vaccinations (Table 1).[1,4–7] This circumstance could indicate that there is no causal relation between anti-SARS-CoV-2 vaccination and pituitary apoplexy or that pituitary apoplexy is truly an extremely rare side effect of the vaccination.

Although the patient was reported not complaining of visual disturbance,[1] we should be informed if the patient underwent ophthalmologic investigations, particularly visual field examination, and if this investigation revealed heteronymous hemianopia to the left respectively right.

Missing is the information if the index patient was truly SARS-CoV-2 negative. Because pituitary apoplexy occurs much more commonly in association with a SARS-CoV-2 infection than

Abbreviations: MRI, magnetic resonance imaging.

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Table 1
Patients with pituitary apoplexy following a SARS-CoV-2 vaccination reported in the literature as per the end of September 2022.

Age	Gender	Vaccine brand	Dosage	LVO	MRI findings	Treatment	Outcome	Reference
24	f	AZV	2nd	1d	apoplexy, adenoma	hydrocortisone	IR	4
37	f	Vaxzevira	nr	5d	apoplexy, adenoma	none	CR	5
28	f	Vaxzevira	1st, 2nd	nr	apoplexy	nr	CR	1
44	m	nr	2nd	3d	apoplexy, adenoma	resection	IR	6
24	f	Vaxzevira	2nd	6d	apoplexy, adenoma	nr	nr	7

AZV: AstraZeneca vaccine, CR: complete recovery, IR: incomplete recovery, LVO: latency between vaccination and onset of clinical manifestations of pituitary apoplexy, nr: not reported.

a vaccination[3] and because anti-SARS-CoV-2 vaccination does not rule a SARS-CoV-2 infection, it is crucial to know the results of the PCR test.

The index patient had previously unknown headache following the first dosage of Vaxzevira.[1] Therefore, it cannot be ruled out that the patient had pituitary apoplexy already earlier, or that other causes were responsible for post-SARS-CoV-2 vaccination headache. The results of cerebral imaging after the first vaccine dose should be provided.

Overall, the interesting study has limitations that call the results and their interpretation into question. Addressing these limitations could further strengthen and reinforce the statement of the study. Patients with new type of headache require neurological exam and eventually cerebral imaging to rule out bleeding, ischemia, venous sinus thrombosis, meningitis, encephalitis, pituitary apoplexy, reversible cerebral vasoconstriction syndrome, dissection, or migraine.

Declarations

Funding sources: no funding was received.

Ethics approval: was in accordance with ethical guidelines. The study was approved by the institutional review board.

Consent to participate: was obtained from the patient.

Consent for publication: was obtained from the patient.

Availability of data: all data are available from the corresponding author.

Code availability: not applicable.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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