

Case Report

Post COVID-Vaccine Cerebritis: A Case Report

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Submission: 20th July, 2024
First revision: 14th September, 2024
Second revision: 23rd October, 2024
Accepted: 28th October, 2024

DOI: 10.51846/jucmd.v4i1.3401



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Abstract

We are reporting here a case of a 33-year-old male who presented to the Emergency Department at Lahore General Hospital in June, 2021, with a short history of fever and generalised tonic-clonic seizures. The symptoms started one day after getting the first dose of Sinopharm vaccine. He was managed initially on the line of refractory status epilepticus in the ICU and was given empirical cover for meningoencephalitis. CSF analysis report came out normal. MRI of the brain showed left frontal lobe cerebritis. Fits and fever settled and the patient fully recovered on the third day of admission. There are very few reported neurological complications of Covid-19 vaccination. One of the rare complications which we have seen with the sinopharm vaccine is cerebritis. This case raises awareness among physicians and contributes to the existing literature so that more vigilance is done while administrating COVID-19 vaccines.

Keywords: COVID-19, Cerebritis, Sinopharm Vaccine

Introduction

Sinopharm vaccine is a deactivated vaccine that carries SARS-CoV-2 antigens to the body. Its efficacy is around 9.8%. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) adverse events following immunization are a critical area of study, particularly in the context of the widespread administration of COVID-19 vaccines.² onset of COVID-19-like symptoms, and 7 days later, confirming COVID-19 using Nucleic Acid Amplification Test (NAAT). Many vaccines have been shown to trigger autoimmune reactions in body which might be a reason for cerebritis by this vaccine.³ Neurological complications, although rare, can pose significant challenges in both diagnosis and management.^{4,5} This case report discusses a 33-year-old, previously healthy male who developed severe neurological symptoms following the administration of the Sinopharm COVID-19 vaccine. The patient presented to the Emergency Department of Lahore General Hospital with high-grade fever, vomiting, and generalized tonic-clonic seizures. Despite an initial management regimen that included anti-seizure medications and ICU admission, his condition required further intervention and diagnostic evaluation. Imaging later revealed left frontal lobe cerebritis, an unexpected finding that emerged only after the patient had been discharged. This case reflects the importance

of thorough post-vaccination monitoring and the need for healthcare professionals to be vigilant about potential severe adverse events. By sharing this case, we aim to contribute to the broader understanding of vaccine-related complications and highlight the need for comprehensive patient follow-up in the post-vaccination period.

Case Presentation

A 33-year-old male with no previous comorbidities, businessman by occupation presented to the Emergency Department of Lahore General Hospital (LGH) in June 2021 with a history of fever, vomiting and fits after getting the Sinopharm vaccine. Fever and vomiting developed on the first day after the vaccine and fits developed on the second day. Fever was high grade with chills and rigours relieved on taking the Tablet paracetamol, and associated with vomiting in 3 episodes. The following day, he developed seizures which were generalized tonic-clonic variety with tongue biting, urinary incontinence and loss of consciousness. He had 6 to 7 episodes of fits without gain of consciousness in between. On examination, he had Blood Pressure = 130/90, Heart Rate = 90/min, Temp. = 101 F, Respiratory rate= 20/min. Systemic examination was unremarkable. He had no previous history of any such illness or epilepsy. He had no known allergies and his vaccination status was not known other than intake of this particular vaccine. On CNS examination, there were no signs of focal deficits, raised intracranial pressure or loss of motor power.

White Blood Cell count was 13000/mm³. X-ray chest showed bilateral lower zone infiltrate. The rest of the baseline labs including BSR, RFTs, LFTs, Serum Electrolytes, PT, aPTT, and INR were normal. Malaria parasite (MP slide) and PCR for COVID-19 were also negative. CT brain showed diffuse cerebral oedema and CSF analysis was normal. HRCT Chest showed a small area of air space opacification in the left lower zone indicating a mild infective process. The patient had to be shifted to ICU because the fits were not being controlled by inj. diazepam and the maximum dose of valproic acid. The patient remained on ventilator support in ICU for one day. Afterwards, he was extubated. The patient gained consciousness and he was

shifted to the medical ward. During his stay in the hospital, he was given IV fluids, InjecTable antibiotics before LP report, which included triple cover with ceftriaxone (2 g), vancomycin (1 g), acyclovir (500 mg) and anti-malarial (Artemether 80 mg) along with iv steroids (Dexamethasone 2 cc). He remained afebrile and seizure-free. EEG couldn't be performed during fits and afterwards, it came out normal. MRI brain was performed in the medical ward when the patient was stable. Treatment was continued for ten days. The patient had an uneventful recovery and was discharged from the hospital. Here, it is interesting to mention that MRI was done during his hospital stay but its report by an expert radiologist came 2 days after he was discharged because of the high patient load on the radiology department. One of the relatives of the patient brought the report and surprisingly it showed left frontal lobe cerebritis (Figure 1a, 1b)

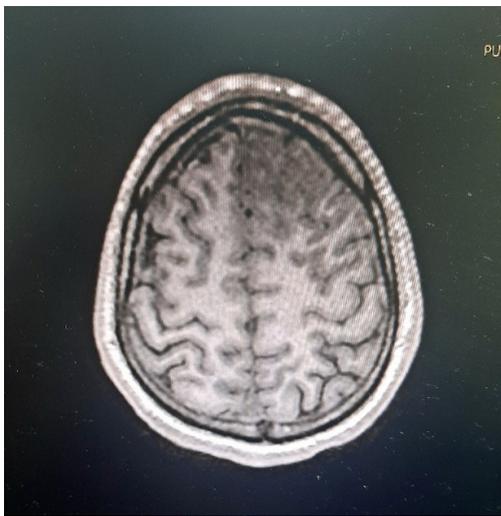


Figure 1a

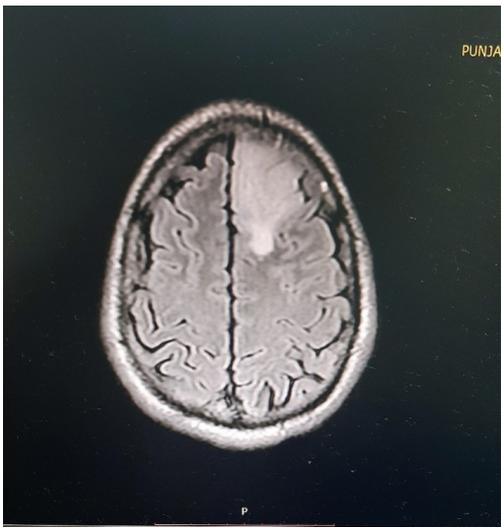


Figure 1b

Figure 1a and 1b MRI Brain showing hypo and hyper-intense areas in the left frontal region respectively which is suggestive of ongoing inflammation i.e. cerebritis. When he enquired about the health of the patient he said that the patient had got sick again, having high-grade fever along with vomiting. He was advised to bring him back but he never showed up neither we were able to contact him.

Discussion

We reported a case of a 33-year-old male diagnosed with post-vaccine-induced cerebritis. This case is fascinating for neurologists as well as physicians because this side effect has not been reported before in Pakistan. Although stroke-like symptoms and autoimmune phenomenon have been reported previously all over the world.^{4,2} onset of COVID-19-like symptoms, and 7 days later, confirming COVID-19 using nucleic amplification test (NAAT test Sinopharm vaccine contains dead mRNA of coronavirus. It induces high levels of neutralizing antibodies.⁶ the first half of 2021 has seen vaccine rollout in many countries. In this Progress article, we provide a snapshot of ongoing vaccine efficacy studies, as well as real-world data on vaccine effectiveness and the impact of virus variants of concern.

Where they have been deployed in a high proportion of the adult population, the currently approved vaccines have been extremely effective in preventing COVID-19, particularly severe disease. Nonetheless, there are still significant challenges in ensuring equitable vaccine access around the globe and lessons that can be learned for controlling this pandemic and for the next pandemic. Apparently, it should not produce any serious side effects. However, there are reports of lethal side effects from all over the world. The common side effects recorded so far are local pain, redness, tenderness at the injection site, headache and fever.⁷ Serious side effects like acute disseminated encephalomyelitis are also reported.

According to WHO, lethal side effects, although rare, are also seen, like some vaccines are reported to produce blood clots, myocarditis and severe anaphylactic reactions. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2,⁸ In our case we had a differential diagnosis of Meningoencephalitis, cerebral malaria and other systemic infection. Cerebritis can have many causes, like bacterial, fungal, viral, penetrating trauma to the head or haematogenous spread that can be from any systemic infection. It may also follow meningitis. Britt and Enzamen described the spectrum of this process into four stages, early cerebritis, late cerebritis, early capsule formation and late capsule formation.⁹ and the findings correlated with the appearance on computerized tomography. Through all relative tests mentioned above, we were able to conclude that the patient was completely healthy and these symptoms were due to side effect of Sinopharm vaccine which might have acted as an autoimmune trigger. The unavailability of patients might limit the study but this opens the door for further research on Vaccine-induced autoimmune reactions.

Conclusion

This case highlights the potential for severe neurological complications following COVID-19 vaccination, emphasizing the need for vigilant post-vaccination monitoring and timely diagnostic intervention. It also emphasizes vaccination history in any case where the diagnosis doesn't fit into any category. Comprehensive follow-up is essential to promptly identify and manage unexpected adverse events, ensuring patient safety and effective healthcare outcomes.

Conflict of Interest: The authors have no conflicts of interest.

Informed Consent: An informed consent was taken from the patient for the purpose of this case report, without revealing her identity.

References

1. Meo AS, Masood A, Shabbir U, Ali H, Nadeem Z, Meo SA, et al. Adverse Effects of Sinopharm COVID-19 Vaccine among Vaccinated Medical Students and Health Care Workers. *Vaccines*. 2023;11(1):1–10. DOI 10.3390/vaccines11010105
2. Drury RE, Camara S, Chelysheva I, Bibi S, Sanders K, Felle S, et al. Multi-omics analysis reveals COVID-19 vaccine induced attenuation of inflammatory responses during breakthrough disease. *Nature Communications*. 2024;15(1). DOI 10.1038/s41467-024-47463-6
3. Riaz A, Alam A, Saleem N. Administration of sinopharm Covid-19 vaccine in cancer patients. *Pakistan Journal of Pharmaceutical Sciences*. 2023 Jan;36(1):67–70.
4. Roongpiboonsopit D, Nithisathienchai C, Akarathanawat W, Lertutsahakul K, Tantivattana J, Viswanathan A, et al. Inactivated COVID-19 vaccine induced acute stroke-like focal neurologic symptoms: a case series. *BMC Neurology*. 2022;22(1):1–9. Available from: <https://doi.org/10.1186/s12883-022-02739-6> DOI 10.1186/s12883-022-02739-6
5. Andrade VM, Maricic I, Kalia R, Jachimowicz L, Bedoya O, Kulp DW, et al. Delineation of DNA and mRNA COVID-19 vaccine-induced immune responses in preclinical animal models. *Human Vaccines & Immunotherapeutics*. 2023;19(3). Available from: <https://doi.org/10.1080/21645515.2023.2281733> DOI 10.1080/21645515.2023.2281733
6. Tregoning JS, Flight KE, Higham SL, Wang Z, Pierce BF. Progress of the COVID-19 vaccine effort: viruses, vaccines and variants versus efficacy, effectiveness and escape. *Nature Reviews Immunology*. 2021;21(10):626–36. Available from: <http://dx.doi.org/10.1038/s41577-021-00592-1> DOI 10.1038/s41577-021-00592-1
7. Li M, Wang H, Tian L, Pang Z, Yang Q, Huang T, et al. COVID-19 vaccine development: milestones, lessons and prospects. Vol. 7, *Signal Transduction and Targeted Therapy*. Springer US; 2022. DOI 10.1038/s41392-022-00996-y
8. Schmeling M, Manniche V, Hansen PR. Batch-dependent safety of the BNT162b2 mRNA COVID-19 vaccine. *European Journal of Clinical Investigation*. 2023;53(8):26–8. DOI 10.1111/eci.13998
9. Britt RH, Enzmann DR, Yeager AS. Neuropathological and computerized tomographic findings in experimental brain abscess. *Journal of Neurosurgery*. 1981 Oct;55(4):590–603. DOI 10.3171/jns.1981.55.4.0590