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POST COVID-19 VACCINE (SINOVAC) CEREBRAL VENOUS SINUS THROMBOSIS

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ABSTRACT

SINOVAC is an inactivated virus COVID 19 vaccine given emergency authorization for COVID-19 Pandemic. Different adverse reactions have been seen in after-marketing of COVID-19 vaccines. Here we present a case of patient who developed cerebral venous sinus thrombosis two weeks after the first dose of SINOVAC vaccine.

Key Words: COVID-19 vaccine, Vaccine, COVID-19, Cerebral venous sinus thrombosis, SINOVAC

INTRODUCTION

Being a global health crisis, Coronavirus COVID-19 pandemic is onerous. Best strategy to deal with this is prevention through isolation and strengthening of immune system via vaccination. Urgent approval of vaccination to control pandemic is essential. Many side effects were reported during experimental phases but few were reported after marketing. Vaccine induced thrombocytopenia with thrombosis is among the serious reaction encountered. Possible mechanism is considered to be hypercoagulable state production both in splanchnic and the cerebral circulation.

Cerebral venous sinus thrombosis (CVST) is more common in females than males with an incidence of 3:1 respectively.¹ It is an uncommon cause of cerebral infarction relative to arterial disorder, but it is of an important consideration due to its morbidity and mortality. It may present with thunderclap headache, nausea, vomiting, blurring of vision, seizures, focal neurological deficit and encephalopathy progressing to coma. Main pathophysiological process involves the complete or partial occlusion of venous sinuses secondary to hyper-coagulable states secondary to pregnancy, malignancy, infection, head injury, obesity and oral contraceptives.²

CASE PRESENTATION

Forty-one years of age, female, married, last childbirth five years back having no previous comorbid and using no other prescribed or over the counter drugs, presented in emergency with complaint of headache for two weeks, vomiting for four days and altered sensorium from one day. There was no history of fever, sore-throat, ear discharge, fits, or sphincteric incontinence. There was no history of fall, trauma, use

of any contraceptive medication and previous systemic thrombotic events or miscarriages. Pulmonary Tuberculosis contact was positive. She received first dose of Covid-19 Vaccine (SINOVAC) two weeks back. On examination at presentation, vital signs were blood pressure of 122/81mm Hg, pulse of 45 beats/min, respiratory rate 24 breaths/min, temperature of 97 degree Fahrenheit and oxygen saturation of 98% at room air with blood sugar level of 126 mg/dl. Neurological examination showed Glasgow Coma scale (GCS) of 11/15 (E⁴V²M⁵), pupils were equal and bilateral reactive to light. She was moving all four limbs spontaneously. Plantars were bilateral withdrawal. Dilated Fundoscopy showed bilateral grade two papilledema. Rest of the systemic examination was unremarkable.

Complete blood cell count showed white blood cell count of 9780/uL with neutrophilic predominance, hemoglobin of 10.1g/dl with reduced RBC indices and platelet count of 275,000/uL. Serum chemistry and coagulation profile was normal. Electrocardiography showed sinus bradycardia. Plain Computed tomography brain showed empty delta sign. Plain chest radiograph was unremarkable. COVID-19 PCR from a nasopharyngeal swab was negative. Antinuclear antibodies (ANA) screening was negative. Erythrocyte sedimentation rate (ESR) was 6/mm and D-dimer was normal. Magnetic resonance imaging along with venography showed thrombosed superior sagittal, straight, transverse, and sigmoid sinuses as well as few cortical veins (Figure 1 and 2). Cerebrospinal fluid examination (CSF) showed white blood cell count of 12/mm³, red blood cell count of 1000/mm³, lymphocytes 91% and glucose and protein levels were 53 mg/dl and 50.2 mg/dl respectively.

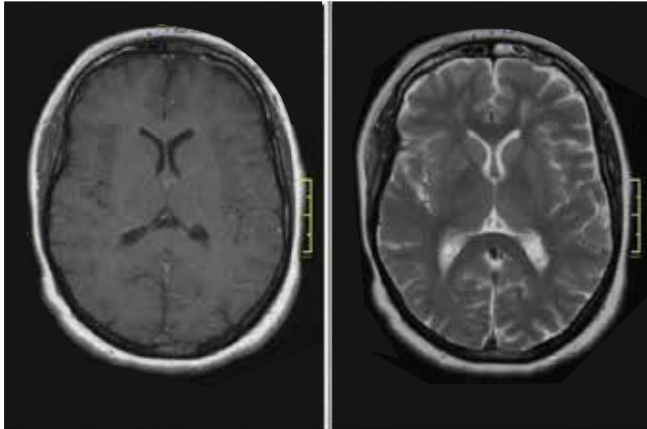


Figure 1: T1 and T2 weighted MRI brain images of the patient

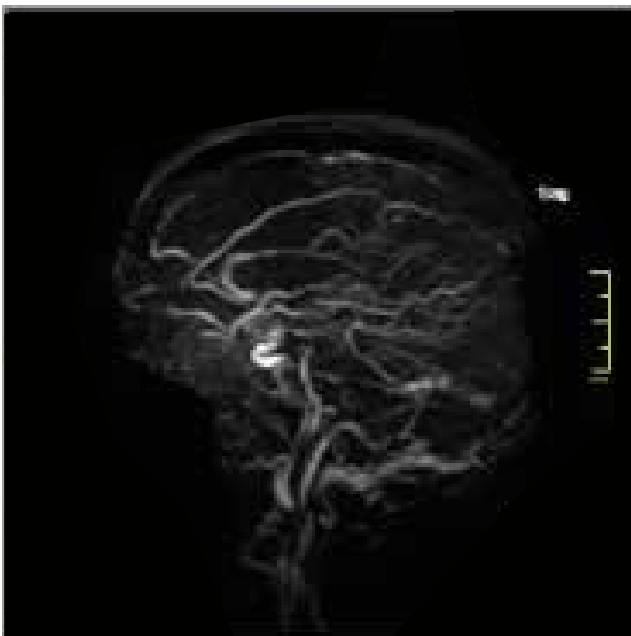


Figure 2: MRV showing flow signal voids suggesting thrombosis in superior sagittal sinus

Considering the diagnosis of Cortical Venous Sinus Thrombosis, anticoagulation therapy with Enoxaparin

1mg/kg subcutaneously 12 hourly was initiated along with Acetazolamide 500mg/day initially then 1000mg/day to reduce intracranial pressure. She remained admitted under neurology care with monitoring for signs of raised intracranial pressure. Her GCS improved and there was no neurological deficit at the time of discharge after 10 days in hospital. She was shifted to oral anticoagulant factor Xa inhibitor Rivaroxaban 30mg/day for 21 days then 20 mg for 6 months. She was discharged with the Modified Rankin scale (MRS) of 0 with advice of follow up after 6 weeks for repeat neuroimaging. Thrombophilia screening was in plan once she was off anticoagulation for at least 4-6 weeks.

DISCUSSION

We report this case to spread awareness about the possible association of CVT with COVID 19 vaccination. This may help the ongoing studies in establishing it as the complication of COVID 19 Vaccination.

In the setting of SARS COVID-19 Infection, many cases of cerebral venous thrombosis have been observed in majority of patients having no predisposing risk factors. Many cases were reported in patients immunized with the adenovirus vector ChAdOx1 nCov-19 (AstraZeneca COVID-19) and Ad26.COV2. S (Janssen COVID-19) vaccines accompanied with mostly thrombocytopenia.³ In our case patient developed Cerebral venous thrombosis after SINO-VAC-COVID 19 vaccination without thrombocytopenia. This is the second reported case of CVST from Pakistan after inactivated virus COVID vaccine; the first was reported in January 2022⁴. In the absence of thrombocytopenia, we were authorized to treat vaccine related CVST likewise as sporadic CVST. Further studies are needed to find clear association and to identify those who are at risk of developing this deadly neurological complication.

CONCLUSION

Cerebral venous sinus thrombosis may follow SINO-VAC vaccination. More such reports are required to establish a definite association.

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Conflict of interest: Author declares no conflict of interest.

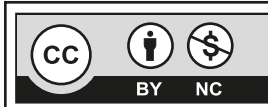
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Author's contribution:

Soban Khan; data collection, data analysis, manuscript writing, manuscript review

Mariam Khalil; data collection, data analysis, manuscript writing, manuscript review

Zaid Waqar; data collection, data analysis, manuscript writing, manuscript review



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