



LETTERS TO THE EDITOR

Depression following ChAdOx1-S/nCoV-19 vaccine



Accumulating scientific evidence suggests the significant role of immune system in the pathophysiology of various psychiatric disorders including depression.¹ However, the exact mechanisms linking immune alterations and the onset of depression are not yet clear. Vaccination produces immune changes in the human body. Studies conducted with influenza vaccination and typhoid vaccination have shown that vaccination can produce significant changes in mood and cognition, and the severity of the changes are associated with circulating immune markers, such as interleukin-6.^{2,3} Here, we report the case of an elderly male who presented with depressive episode after receiving the first dose of ChAdOx1-S/nCoV-19 vaccine.

A 73-year-old male who had no past or family history of psychiatric illness, was seen in outpatient psychiatry clinic of our hospital with son in law with psychiatric symptoms of 2 week duration. The symptoms started 2 days after he received first dose of COVID-19 vaccine (ChAdOx1-S/nCoV-19 vaccine) from a primary health centre near his home on 26th April 2021. During the first day after receiving vaccination he complained of pain at the site of injection. From the second day onwards, he started complaining of tiredness, exacerbation in pain in both knee joints, low mood, dryness of mouth, lack of interest in activities which he usually enjoyed like reading news papers or watching TV, marked reduction in appetite, and difficulty in initiating sleep. There was no history of fever, neurological deficits, or seizure following vaccination. According to family, he had no ongoing life stressors and he was very active in family as well as in his job. His mental status examination revealed reduced speech productivity, depressed affect, hopelessness and helplessness. There was no delusions or hallucinations.

There was no significant medical comorbidities. Blood investigations such as WBC count, differential count, RFT, serum electrolytes, blood sugar, were within normal limits. He was diagnosed with Moderate depressive episode according to DSM 5, and after psycho educating about his illness, oral sertraline 50 mg per day and oral clonazepam 0.25 mg per day was started. His depressive symptoms significantly improved over a period of 2 weeks.

The impact of vaccination on mental health of recipients is still a matter of debate. A recent study exploring temporal

association of certain neuropsychiatric disorders following vaccination of children and adolescents found that Influenza vaccinations during the prior 3, 6, and 12 months were also associated with incident diagnoses of anorexia nervosa, obsessive-compulsive disorder, and an anxiety disorder.⁴ Previous studies also show a threefold increase in the incidence of narcolepsy after following the 2009 H1N1 pandemic in China, probably mediated by immunological mechanisms.⁵ Another study evaluated whether fluctuations in inflammation following a mild immune stimulus (the seasonal influenza vaccine) were associated with changes in daily reported features of depression for up to a week in a healthy sample of young adults. The authors found that Greater increases in IL-6 were associated with greater mood disturbance on post-vaccine days, specifically depressive symptoms, indicating that minor increases in inflammation correspondingly increases depressive features.³ To the best of our knowledge, there are no reports of psychological problems following COVID-19 vaccination till date.

Another possibility in our case is sickness behaviour following vaccination. Sickness behaviour is the psycho-behavioral strategy of the human body to fight infection, triggered by the proinflammatory cytokines.⁶ The clinical features of depression and sickness behaviour are often very similar, and there are also evidence for the possibility of a shift from sickness behavior to depression. However, sickness behaviour is often associated with fever and associated neuroendocrine changes. In our case, there was no initial fever response, suggesting lesser chance for sickness behaviour.

In conclusion, this case report highlights the rare possibility of depression following ChAdOx1-S/nCoV-19 vaccine administration. Physician should be aware of this rare possibility and should enquire elderly patients regarding mood symptoms following COVID-19 vaccination.

Ethical considerations: In this publication the WHO guidelines for good clinical practice were followed. The patient has consented that his data can be published anonymously by the author.

Declaration of Competing Interest

The author has no conflict of interest to declare.

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References

1. Guo X, Jiang K. Is Depression the result of immune system abnormalities?. *Shanghai arch psychiatry* 2017;29(3):171-173. doi:10.11919/j.issn.1002-0829.217015.
2. Sharpley AL, Cooper CM, Williams C, Godlewska BR, Cowen PJ. Effects of typhoid vaccine on inflammation and sleep in healthy participants: a double-blind, placebo-controlled, crossover study. *Psychopharmacology (Berl)*. 2016;233(18):3429–35. <https://doi.org/10.1007/s00213-016-4381-z>.
3. Kuhlman KR, Robles TF, Dooley LN, Boyle CC, Haydon MD, Bower JE. (2018). Within-subject associations between inflammation and features of depression: using the flu vaccine as a mild inflammatory stimulus. *Brain, Behav Immun*. 2018;69:540–7. <https://doi.org/10.1016/j.bbi.2018.02.001>.
4. Leslie DL, Kobre RA, Richmand BJ, Aktan Guloksuz S, Leckman JF. Temporal association of certain neuropsychiatric disorders following vaccination of children and adolescents: a pilot case-control study. *Front Psychiatry*. 2017;8:3. <https://doi.org/10.3389/fpsy.2017.00003>. PMID: 28154539; PMCID: PMC5244035.
5. Han F, Lin L, Warby SC, Faraco J, Li J, Dong SX, et al. Narcolepsy onset is seasonal and increased following the 2009 H1N1 pandemic in China. *Ann Neurol*. 2011 Sep;70(3):410–7. <https://doi.org/10.1002/ana.22587>. Epub 2011 Aug 22. PMID: 21866560.
6. Dantzer R. Cytokine, sickness behavior, and depression. *Immunol Allergy Clin North Am*. 2009;29(2):247–64. <https://doi.org/10.1016/j.iac.2009.02.002>.

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