CORRESPONDENCE

Vaccine-Induced Immune Thrombocytopenia and Thrombosis after the Sputnik V Vaccine

TO THE EDITOR: Since February 2021, very rare cases of thrombosis with thrombocytopenia syndrome, later named vaccine-induced immune thrombocytopenia and thrombosis (VITT) have been reported after receipt of the adenoviral-vector vaccines ChAdOx1 nCoV-19 (Oxford–AstraZeneca) and Ad26.COV2.S (Johnson & Johnson–Janssen). Such reports have prompted regulatory actions in the United States, Europe, and other countries. A report on a large case series of 220 patients described the clinical features and diagnostic criteria of this disorder.[1] Other adenovirus vector vaccines are available, including Ad5-nCoV (CanSinoBio Biologics) and Gam-COVID-Vac (Sputnik V); the latter uses a heterologous recombinant adenovirus approach in two injections (a rAd26 prime and a rAd5 booster) given 21 days apart.[2]

Estimations of the incidence of VITT range from 3.2 to 16.1 cases per million doses for ChAdOx1 nCoV-19, 1.7 to 3.7 cases per million doses for Ad26.COV2.S, and 0.0081 cases per million doses for Ad5-nCoV.[3] The results of repeated searches of the literature indicated that no cases were reported after the administration of the Sputnik V vaccine as of August 12, 2022. According to the reports of aggregated data published by the Argentinian Ministry of Health, as of May 31, 2022, a total of 13 cases of VITT had been reported; 11 cases were reported after the administration of the ChAdOx1 nCoV-19 vaccine (0.37 cases per million doses) and 2 cases after the administration of 20,538,979 doses of the Sputnik V vaccine (0.1 cases per million doses).[4]

As part of the Vigilance of Vaccines against Covid-19 (ViVa) study, we collected detailed information regarding one case of VITT that was reported after the receipt of the Sputnik V vaccine at one Argentinian public vaccination center on July 15, 2021. (Details regarding the study oversight are provided in the Supplementary Appendix, available with the full text of this letter at NEJM.org.) A healthy 24-year-old woman who had never been exposed to heparin presented with abdominal pain on day 7 after receipt of the vaccine; persistent headache, vomiting, and facial bruising started on days 8 and 9. Despite this typical presentation and time-to-onset data, VITT was not suspected until severe focal neurologic symptoms developed 36 hours later. On day 11, computed tomography showed cerebral sinus venous thrombosis and hemorrhage; the patient's platelet count was 27,000 per milliliter, and the D-dimer level was 2000 ng per milliliter (reference value, <250 ng per milliliter), which was equivalent to 4000 fibrinogen-equivalent units (FEU; reference value, <500 FEU). The patient died on day 14. In this well-documented fatal case, the onset of symptoms occurred 5 to 30 days after vaccination, thrombocytopenia and thrombosis were confirmed by means of diagnostic and surgical procedures, the D-dimer level was at least eight times as high as the upper limit of the normal range, and the level of IgG antibodies against platelet factor 4 was 68% on enzyme-linked immunosorbent assay (Asserachrom HPIA–IgG; reference value, ≤12%). These findings meet the criteria for level 1 of the Certainty Determination of the Brighton Collaboration case definition for thrombosis with thrombocytopenia syndrome[5] and are classified as definite VITT according to the case definition criteria for VITT as determined by an expert hematology panel in the United Kingdom.[1]

The possibility of VITT after the adenovirus vector Sputnik V vaccine has not been cited in regulatory warnings or by the news media. The Sputnik V vaccine has been widely distributed in 71 countries in Latin America, Asia, and Africa.[2]

Because even a very low case rate could have resulted in hundreds of cases, it is mandatory to raise public awareness and to take the necessary steps to expand early detection of VITT after the administration of the Sputnik V vaccine.

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Disclosure forms provided by the authors are available with the full text of this letter at NEJM.org.

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