

Supplemental Data

Table e-1. Unadjusted Acute Ischemic Stroke Incidence

Vaccine	Total doses	Number of cases	Incidence (95% CI)*
BNT162b2	24,416,970	11	0.45 (0.25–0.81)
ChAdOx1 nCov-19	29,157,558	19	0.65 (0.42–1.02)
CoronaVac	13,906,520	6	0.43 (0.20–0.94)
Gam-COVID-Vac	4,450,465	1	0.22 (0.04–1.27)
Ad5-nCoV	5,122,301	6	1.17 (0.54–2.56)
Ad26.COV2-S	1,345,632	0	NA
All vaccines	79,399,446	43	0.54 (0.40–0.73)

Abbreviations: CI confidence interval; NA, not applicable; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2. *Incidence per 1,000,000 doses administered.

Table e-2. Unadjusted Intracranial Hemorrhage Incidence

Vaccine	Total doses	Number of cases	Incidence (95% CI)*
BNT162b2	24,416,970	6	0.25 (0.11–0.54)
ChAdOx1 nCov-19	29,157,558	2	0.07 (0.02–0.25)
CoronaVac	13,906,520	3	0.22 (0.07–0.63)
Gam-COVID-Vac	4,450,465	0	NA
Ad5-nCoV	5,122,301	0	NA
Ad26.COV2-S	1,345,632	0	NA
All vaccines	79,399,446	11	0.14 (0.08–0.25)

Abbreviations: CI confidence interval; NA, not applicable; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2. *Incidence per 1,000,000 doses administered.

Table e-3. Unadjusted Cerebral Venous Thrombosis Incidence

Vaccine	Total doses	Number of cases	Incidence (95% CI)*
BNT162b2	24,416,970	0	NA
ChAdOx1 nCov-19	29,157,558	2	0.07 (0.02–0.25)
CoronaVac	13,906,520	0	NA
Gam-COVID-Vac	4,450,465	0	NA
Ad5-nCoV	5,122,301	0	NA
Ad26.COV2-S	1,345,632	0	NA
All vaccines	79,399,446	2	0.03 (0.01–0.09)

Abbreviations: CI confidence interval; NA, not applicable; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2. *Incidence per 1,000,000 doses administered.

Table e-4. Baseline Characteristics, Vaccination Details, Acute treatment, and Clinical Outcome of Patients who Developed an Acute Ischemic Stroke as an Adverse Event Following Immunization.

	AIS cases	ChAdOx1 nCov-19	BNT162b2	Gam-COVID-Vac	Ad5-nCoV	CoronaVac
	(n = 43)	(n = 19)	(n = 11)	(n = 1)	(n = 6)	(n = 6)
Demographics						
Age, median (IQR), years	67 (54–74)	68 (48–76)	64 (53–69)	82	62 (50–69)	67 (55–79)
Sex, n (%)						
Female	21 (48.8)	8 (42.1)	7 (63.6)	1 (100)	2 (33.3)	3 (50)
Male	22 (51.2)	11 (57.9)	4 (36.4)	0	4 (66.7)	3 (50)
Medical history, n (%)						
Hypertension	26 (60.5)	13 (68.4)	4 (36.4)	1 (100)	3 (50)	5 (83.3)
Diabetes	18 (41.9)	12 (63.2)	2 (18.2)	1 (100)	0	3 (50)
Obesity, BMI ≥ 30 kg/m ²	3 (7.9)	2 (10.5)	0	0	1 (16.7)	0
Smoking	8 (18.6)	6 (31.6)	0	0	1 (16.7)	1 (16.7)
Atrial fibrillation	9 (20.9)	3 (15.8)	4 (36.4)	0	2 (33.3)	0
Other heart disease*	7 (16.3)	6 (31.6)	1 (9.1)	0	0	0
Past SARS-CoV-2 infection	4 (9.3)	0	1 (9.1)	0	1 (16.7)	2 (33.3)
Vaccine dose, n (%)						

First	32 (74.4)	15 (78.9)	6 (54.5)	0	6 (100)	5 (83.3)
Second	11 (25.6)	4 (21.1)	5 (45.5)	1 (100)	NA**	1 (16.7)
Days from immunization to stroke, median (min-max), days	2 (0–30)	3 (3–30)	4 (0–30)	0	1 (0–26)	5 (0–22)
Acute treatment, n (%)						
Thrombolysis	3 (6.9)	2 (10.5)	0	1 (100)	0	0
Thrombectomy	2 (4.7)	1 (5.4)	1 (9.1)	0	0	0
Craniectomy	2 (4.7)	1 (5.4)	0	0	0	1 (16.7)
Clinical outcome, n (%)						
Good outcome, mRS 0–2	21 (48.8)	8 (42.1)	7 (63.6)	1 (100)	2 (33.3)	3 (50)
Poor outcome, mRS 3–5	15 (34.9)	9 (47.4)	2 (18.2)	0	2 (33.3)	2 (33.3)
Death, mRS 6	7 (16.3)	2 (10.5)	2 (18.2)	0	2 (33.3)	1 (16.7)

Abbreviations: IQR, interquartile range; BMI, body mass index; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; NA, not applicable; mRS, modified Rankin scale. Ad26.COVS-S is not included in this table as there were stroke reports with this vaccine.

*Includes 4 patients with ischemic heart disease, and heart failure, valvular heart disease, and congenital cardiomyopathy, each in 1 patient. **Ad5-nCoV is a single dose vaccine regimen; the rest are two-dose vaccine regimen.