and (2) the predicted probability of good outcome according to core volume and mismatch ratio in the MT group (Figure 3 from Reference 1), showing that increasing core volume significantly mitigates the relationship between mismatch ratio and clinical effects of MT versus BMM.

Regarding safety, the aim of our study was not to determine the factors associated with parenchymal hemorrhage (PH) after MT, but whether the persistence of significant penumbra modifies the effects of MT in comparison to BMM on PH. Our findings show a higher risk of PH in the MT group, regardless of the mismatch ratio. In other words, the major benefits derived from penumbral salvage following MT in patients with significant mismatch clearly outweighed any negative impact of PH on functional outcome. Conversely, the lack of beneficial effect of MT on outcome together with the higher odds of PH points to MT being not only "not beneficial," but also potentially harmful in patients without mismatch.

Finally, it was not possible to "factor in the model" the imaging-to-puncture delay, as per definition the BMM group had no groin puncture. However, the imaging-to-puncture delay in the MT group did not differ according to the occurrence of PH: 51 minutes (interquartile range [IQR] = 44–74) versus 63 minutes (IQR = 45–78) in patients with versus without PH, respectively ($p = 0.88$).

Acknowledgment

We thank the FRAME (FRench Acute Multimodal imaging study to select patients for thrombEctomy) investigators.

Potential Conflicts of Interest

Nothing to report.

[1]*Neurology Department, A. de Rothschild Hospital Foundation, Paris, France*
[2]*Acute Stroke Unit, Pierre-Paul Riquet Hospital, University of Toulouse Hospital Center and Toulouse NeuroImaging Center, University of Toulouse, Inserm, University Paul Sabatier, Toulouse, France*

Address correspondence to Dr Seners, Neurology Department, Hôpital Fondation A. de Rothschild, 29, rue Manin, 75019 Paris, France. E-mail: pseners@for.paris

Reference

1. Seners P, Oppenheim C, Turc G, et al. Perfusion imaging and clinical outcome in acute ischemic stroke with large core. Ann Neurol 2021; 90:417–427.

DOI: 10.1002/ana.26224

Guillain-Barré Syndrome in an Australian State Using Both mRNA and Adenovirus-Vector SARS-CoV-2 Vaccines

Joshua Osowicki, PhD [1,2,3†] Hannah Morgan, MPH,[1†] Adele Harris, RN,[1] Nigel W. Crawford, PhD,[1,2,3] Jim P. Buttery, PhD,[1,2,3,4] and Lynette Kiers, MD[5,6]

Dear Editor,

We read the two recent reports of Guillain–Barré syndrome (GBS) following SARS-CoV-2 vaccination with interest and were inspired to review GBS reports submitted to our enhanced spontaneous surveillance system in Victoria, Australia (SAEFVIC, Surveillance of Adverse Events Following Vaccination in the Community).[1–3]

Since 21 February 2021, Australia has administered both the AstraZeneca-Oxford (ChAdOx1-S) and Pfizer-BioNTech (BNT162b2) vaccines according to a risk-stratified rollout schedule, initially targeting higher risk groups including healthcare and border workers, as well as residents in aged care facilities (RACF). As of 5 July a total of 1,469,620 doses of the ChAdOx1-S and 882,279 doses of the BNT162b2 vaccines have been administered in Victoria, and SAEFVIC has received 14 reports of GBS after SARS-CoV-2 vaccination, including one report of the bifacial weakness with paresthesia variant reported by Allen *et al.* (Table). RACF residents have exclusively received the Pfizer-BioNTech vaccine. All reports were temporally related to the first dose of ChAdOx1-S adenovirus vector vaccine, with symptom onset within 4 weeks of COVID-19 vaccination. Brighton Collaboration case definitions were used to determine diagnostic certainty and severity graded using the GBS Disability Score.[4]

After excluding one classical case of acute motor axonal neuropathy following *Campylobacter jejuni* gastroenteritis, we calculated population GBS observed rates and compared these to historical background rates. The observed GBS incidence rate was 1.0 reports per 100,000 doses of ChAdOx1-S vaccine, higher than the expected background rate of 0.61 presentations per 100,000 adult population within 42 days of vaccination (derived from ICD-10-coded admitted episodes).

While temporal associations do not imply causality and spontaneous surveillance systems have limitations in capturing all adverse events following immunization, the observed disproportionality of vaccines involved was unexpected, with zero reports to SAEFVIC of GBS after the BNT162b2 mRNA vaccine.[5,6] We do note there are also now case reports of GBS after SARS-CoV-2 mRNA vaccines. Notwithstanding small numbers limiting further interpretation, our data demonstrate an excess of observed cases compared with expected, and disproportionate excess reporting of GBS following ChAdOx1-S vaccine. Continuing vigilance is required, with efforts to maximize ascertainment and reporting, and minimize reporting bias. Spontaneous surveillance systems such as SAEFVIC have an important continuing role to play in monitoring AEFI in the COVID-19 pandemic, moving beyond individual case reports to generate the

TABLE. Cases of Guillain-Barré Syndrome Reported Following SARS-CoV-2 Vaccination in Victoria, Australia

Age (years)	Sex	SARS-COV-2 vaccine product (dose number)	Symptom onset (days post-vaccine)	GBS subtype	GBS disability score	Brighton Collaboration level
75	F	AZ (1)	17 (post-AZ) 4 (post-PCV & influenza vaccine)	Typical GBS (AIDP)	3	Level 1
77	F	AZ (1)	17	Typical GBS (AIDP)	4	Level 1
57	F	AZ (1)	13	Typical GBS (AIDP)	4	Level 1
57	M	AZ (1)	12	Paraparetic GBS	3	Level 2
52	F	AZ (1)	20	BFP	1	Level 4[a]
54	M	AZ (1)	10	Typical GBS (AIDP)	2	Level 1
80	F	AZ (1)	21	Paraparetic GBS	4	Level 2
72	M	AZ (1)	14	Typical GBS	4	Level 3
59	M	AZ (1)	25	Typical GBS	2	Level 4
69	M	AZ (1)	16	Typical GBS	5	Level 2
72	F	AZ (1)	11	Typical GBS	4	Level 2
66	M	AZ (1)	11	Typical GBS (with left facial weakness)	4	Level 1
63	M	AZ (1)	14	Typical GBS (with right facial weakness)	3	Level 2
70	M	AZ (1)	14	Typical GBS (AMAN)[b]	3	Level 1

AIDP = acute inflammatory demyelinating neuropathy; AMAN = acute motor axonal neuropathy; AZ = AstraZeneca-Oxford (ChAdOx1-S) SARS-CoV-2 vaccine; BFP = Bifacial weakness with paresthesias; GBS = Guillain-Barré Syndrome; PCV = pneumococcal conjugate vaccine.
[a]Brighton Collaboration levels do not adequately capture all GBS variants.
[b]Following proven *Campylobacter jejuni* gastroenteritis.

evidence needed to inform vaccine recommendations at a local and international level.

Potential Conflicts of Interest

Jim Buttery is a site investigator for non-COVID vaccine related clinical trials for both Pfizer and AstraZeneca. He does not receive compensation for this but his (former) employer Monash Health is compensated for his time. All other authors have no relevant financial or other conflicts of interest pertaining to this submission.

[1]*Surveillance of Adverse Events Following Vaccination In the Community (SAEFVIC), Murdoch Children's Research Institute, Melbourne, VIC, Australia*
[2]*Department of General Medicine, Royal Children's Hospital Melbourne, Melbourne, VIC, Australia*
[3]*Department of Paediatrics, The University of Melbourne, Melbourne, VIC, Australia*
[4]*Centre for Health Analytics, Royal Children's Hospital Melbourne, Melbourne, VIC, Australia*
[5]*Department of Neurology, Royal Melbourne Hospital, Melbourne, VIC, Australia*
[6]*Department of Medicine, Faculty of Medicine, Health and Dentistry, The University of Melbourne, Melbourne, VIC, Australia*

Address correspondence to Dr Osowicki, Surveillance of Adverse Events Following Vaccination In the Community (SAEFVIC), Murdoch Children's Research Institute, Parkville, 3052, VIC, Australia. E-mail: josh.osowicki@mrci.edu.au

[†]co-authors Hannah Morgan and Joshua Osowicki contributed equally to this work.

References

1. Allen CM, Ramsamy S, Tarr AW, et al. Guillain-Barré syndrome variant occurring after SARS-CoV-2 vaccination. Ann Neurol 2021;90:315–318. https://doi.org/10.1002/ana.26144

2. Maramattom BV, Krishnan P, Paul R, et al. Guillain-Barré syndrome following ChAdOx1-S/nCoV-19 vaccine. Ann Neurol 2021;90:312–314. https://doi.org/10.1002/ana.26143

3. Crawford NW, Cheng A, Andrews N, et al. Guillain-Barre syndrome following pandemic (H1N1) 2009 influenza a immunisation in Victoria: a self-controlled case series. Med J Aust 2012;197:574–578.

4. van Koningsveld R, Steyerberg EW, Hughes RA, et al. A clinical prognostic scoring system for Guillain-Barre syndrome. Lancet Neurol 2007;6:589–594.

5. Lunn MP, Cornblath DR, Jacobs BC, et al. COVID-19 vaccine and Guillain-Barré syndrome: let's not leap to associations. Brain 2021;144:357–360.

6. Márquez Loza AM, Holroyd KB, Johnson SA, et al. Guillain- Barré syndrome in the placebo and active arms of a COVID-19 vaccine clinical trial: temporal associations do not imply causality. Neurology 2021. (Online ahead of print). https://pubmed.ncbi.nlm.nih.gov/33824169/

DOI: 10.1002/ana.26218