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21 **Towards a deeper understanding of the dynamics of COVID-19-associated**  
22 **Guillain-Barre Syndrome**

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## **Towards a deeper understanding of the dynamics of Covid-19-associated Guillain Barre syndrome**

The study by Li et al[1] is part of a growing body of knowledge exploring the relationship between Covid-19 infection and Guillain Barre syndrome(GBS)[2]. On the one hand, in the latter systematic review, Covid-19 infection appeared to be the trigger for the occurrence of GBS in the group of 94 GBS patients in whom a high proportion had unequivocal laboratory evidence of active Covid-19 infection , including, in 37% of cases, also “abnormal CT imaging(chest)”[2]. Proof of active Covid-19 infection was robust, substantiated by presence of positive RT-PCR tests(derived from nasopharyngeal swabs and from oropharyngeal samples) in 81 subjects, and presentation to a healthcare facility with diagnosed Covid 19(8 cases). Only 5(5.3%) of the 94 subjects were diagnosed by serological evaluation[2]. By contrast, in the review authored by Li et al, active COVID-19 infection was validated by RT-PCR in only 32(72.7%) out of 44 cases [1]. Validation was by serological testing in 5(11.4%) of the 44 cases. Serological tests, however, can generate false positive results . The reason is that “Given the homology of SARS-CoV-2 to other corona viruses, it is likely that antigens used as targets in poorly designed assays will cross-react”[3]. Furthermore, a meta-analysis published in 2020 came to the conclusion that “higher quality clinical studies assessing the diagnostic accuracy of serological tests for covid-19 are urgently needed”[4].

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3 Ranged against GBS patients with active Covid-19 infection[1],[2] are 8 patients  
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6 in whom active Covid 19 infection had been ruled out by a negative RT-PCR  
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9 test , and in whom the trigger for GBS appears to be the administration of  
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12 either the ChAdOx1-S/nCoV-19 vaccine(AstraZeneca vaccine)[5],[6],[7],[8] or  
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15 the Pfizer/BioNTech BNT162b2 vaccine(Pfizer vaccine)[9].  
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18 An intermediate group consisted of 6 GBS subjects[10-12] who were  
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21 suboptimally characterised due to the omission to document, unequivocally,  
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24 the presence or absence of active Covid 19 infection. These 6 subjects  
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27 developed GBS during a 1-22 day period following receipt of a single dose of  
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30 vaccine. None of the 6 subjects had documentation of either a RT-PCR test  
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33 result or a serological test result or a CT chest report[9-11]. Accordingly, in  
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36 these 6 subjects the trigger for GBS might either have been a “vaccine  
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39 breakthrough “ infection or the vaccine itself. Vaccine breakthrough  
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42 infections are infections which occur in spite of vaccination[13]. In a study  
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45 conducted in Israel, 4514 subjects developed vaccine breakthrough infection  
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48 (asymptomatic in 1351 cases) during the 21 days interval between the first  
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51 dose of vaccine and the second dose of the vaccine[14]. The subjects who  
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54 experienced those infections all tested positive by RT-PCR[14]. If GBS were to  
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57 develop under those conditions it would have to be categorised as being  
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60 Covid-19-associated, and not vaccine-associated.

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3 For patients to be correctly allocated to the category of vaccine-associated GBS  
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6 an absolute requirement is absence of active Covid-19 infection, irrespective of  
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9 whether or not the infection is a vaccine breakthrough infection. Presently,  
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11 the optimal criterion for absence of active Covid-19 infection is a negative RT-  
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13 PCR test. Infection-related GBS and vaccine-related GBS are, by definition,  
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17 mutually exclusive subgroups.  
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## 28 **References**

29  
30  
31  
32 [1]Xiujun Li BS., Wang Y., Wang H., Wang Y  
33  
34

35  
36 SARS-CoV-2 associated Gullain-Barre syndrome is a prainfectious disease  
37  
38

39  
40 QJMed 2021  
41  
42

43  
44 Article in Press  
45  
46

47 [2]Sheik AB., Chourasia PK., Javed N., Chourasia MK., Suriya SS., Upadhyay S et  
48  
49

50  
51 al  
52

53  
54 Association of Guillain-Barre syndrome with COVID-19 infection: An updated  
55  
56

57  
58 systematic review  
59  
60

1  
2  
3 Journal of Neuroimmunology 2021;355;577577  
4  
5

6  
7 Doi.org/10.1016/j.jneuroih.2021.577577  
8  
9

10 [3]Farnsworth C W., Anderson NW  
11  
12

13  
14 SARS-CoV-2 serology: Much hype, Little data  
15  
16

17  
18 Clinical Chemistry 2020;66:875-877  
19  
20

21 [4]Bastos ML., Tavaziva G., Abidi SK., Campbell JR., Haraoul LP., Johnston JC et  
22  
23

24 al  
25  
26

27  
28 Diagnostic accuracy of serological tests for covid-19: systematic review and  
29  
30

31 meta-analysis  
32  
33

34  
35 BMJ 2020;370:m25161 doi:10.1136/bmj.m2516  
36  
37

38 [5]Allen C., Ramsamy S., Tarr A., Tighe PJ., Irving WL., Tanasescu R et al  
39  
40

41  
42 Guillain-Barre syndrome variant occurring after SARS-CoV-2 vaccination  
43  
44

45  
46 Annals of Neurology 2021  
47  
48

49 <https://doi.org/10.1002/ana.26144>  
50  
51

52  
53 [6]Patel SU., Khurram R., Lakhani A., Quirk B  
54  
55

56  
57 Guillain-Barre syndrome following the first dose of the chimpanzee  
58  
59

60 adenovirus-vectored COVID-19 vaccine, ChAdOx1

1  
2  
3 BMJ Case Reports 2021;14:e242956 doi:10.1136/bcr-2021-242956  
4  
5

6  
7 [7]Azam S., Khalil A., Taha A  
8  
9

10 Guillain-Barre syndrome in a 67 year old male post COVID-19  
11  
12 vaccination(AstraZeneca)  
13  
14

15  
16  
17 American Journal of Case Reports 2021;9:424-427  
18  
19

20  
21 [8]Razok A.,Shams A., Almeer A., Zahid M  
22  
23

24 Post-COVID-19 vaccine Guillain-Barre syndrome; first reported case from Qatar  
25  
26

27  
28 Authorea May 07.202a  
29  
30

31  
32 DOI:10.22541/au.162041666.6580398/v1  
33  
34

35  
36 [9]Ogbebor O., Seth H., Min Z., Bhanot N  
37  
38

39 Guillain-Barre syndrome following the first dose of SARS-CoV-2 vaccine: A  
40  
41 temporal occurrence, not a causal association  
42  
43

44  
45 ID Cases 2021;24:e01143  
46  
47

48  
49 <http://dx.doi.org/10.1016/j.idcr.2921.e01143>  
50  
51

52  
53 [10]Maramattom BV., Krishnan P., Paul R., Padmanabhan S., Nampoothiri SCV.,  
54  
55 Syed AA., Mangat HS  
56  
57

58  
59 Guillain-Barre syndrome following ChAdOx1-S/nCoV-19 vaccine  
60

1  
2  
3 Ann Neurol 2021;001:1-3  
4  
5

6  
7 [11]Finsterer J  
8  
9

10 Exacerbating Guillain-Barre syndrome eight days after vector-based COVID-19  
11  
12 vaccination  
13  
14

15  
16  
17 Case Reports in Infectious Diseases Volume 2021, Article ID 3619131  
18  
19

20  
21 <https://doi.org/10.1155/2021/3619131>  
22  
23

24  
25 [12]Waheed S., Bayas A., Hindi F., Rizvi Z., Espinosa P  
26  
27

28 Neurological complications of COVID-19: GUILLAIN-Barre syndrome following  
29  
30 Pfizer COVID-19 vaccine  
31  
32

33  
34 Cureus 13(2):e13426.DOI.10.7759/cureus.13426  
35  
36

37  
38 CUREUS 2021 DOI:10.7759/cureus.13426  
39  
40

41  
42 [13]Kustin T., Harel N., Finkel U., Perchik S., Harari S et al  
43  
44

45 Evidence for increased breakthrough rates of SARS-CoV-2 variants of concern  
46  
47 in BNT162b2-mRNA-vaccinated individuals  
48  
49

50  
51 Nature Medicine  
52  
53

54  
55 <https://doi.org/10.1038/s41591-021-01413-7>  
56  
57

58  
59 [14]Chodick G., Tene L., Rotem RS., Patalon T., Gazit S., Ben-Tov A et al  
60

1  
2  
3 The effectiveness of the two-dose BNT162b2 vaccine: Analysis of real-world  
4  
5  
6 data  
7  
8  
9

10 Clinical Infectious Diseases 2021 ciab 438  
11

12  
13 <https://doi.org/10.1093/cid/ciab438>  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
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