Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Comments on Stroke as a Neurological Complication of COVID-19: A Systematic Review and Meta-Analysis of Incidence, Outcomes and Predictors

Dear Editor,

We read with interest the research article entitled "Stroke as a Neurological Complication of COVID-19: A Systematic Review and Meta-Analysis of Incidence, Outcomes and Predictors",[1] it was a systematic review and meta-analysis on stroke incidence and different outcomes over COVID-19 patients. We are particularly concerned about the potential groups of overlapped COVID-19 stroke subjects in the meta-analysis under the worldwide SARS-CoV-2 pandemic.

Firstly, Nalleballe et al. analyzed COVID-19 adult patients in the TriNetX database,[2] which was a global health collaborative clinical research platform collecting real-time electronic medical records data from a network of health care organizations from January 20th to June 10th, 2020. The real-time updating subjects included in this primary study likely overlapped the other remaining 29 studies in the meta-analysis reporting COVID-19 stroke cases, thus exaggerating the results in Table 1.

Secondly, Varatharaj et al. collected their data via the clinicians (United Kingdom) notified cases on the ABN portal, BASP portal and the RCPsych portal on April 26th, 2020.[3] Going through the included research sites of these portals, there were potential overlapping of cases from King's College Hospital in London published by Benger et al.,[4] and National Hospital for Neurology and Neurosurgery in Queen Square of London by Beyrouti et al.[5] The final percentage result in Table 5 would be increased by this dual reporting.

Thirdly, Belani et al. and Kihira et al. both conducted their multicenter retrospective study with patient who had "stroke alert" or "code stroke" from six hospitals spread across three New York City boroughs.[6,7] Although the details of the 3 boroughs were not mentioned in Kihira et al.'s study,[17] both studies were conducted exactly over the same time from March 16th to April 5th, 2020; and both author groups were affiliated to the Mount Sinai Health System in New York of the United States. Going through the two studies, the 139 and 141 patients included were with extremely similar demographics, characteristics data and stroke incidence. There was potential duplication of stroke subjects, which would exaggerate the total number in Table 1.

Finally, Jain et al. and Yaghi et al. were both affiliated to the New York University Langone Health in United States.[8,9] Despite their studies were started at different time points, there was almost a month of overlapped study period from March 15th to April 13th, 2020. Duplicated subjects could not be neglected within a month time of active local COVID-19 outbreak in New York. Results in Figure 2, 3, 4 and Table 1, 2, 5 would potentially be biased.

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References

1. Siow I, Lee KS, Zhang JJY, et al. Stroke as a neurological complication of COVID-19: a systematic review and meta-analysis of incidence, outcomes and predictors. J Stroke Cerebrovasc Dis 2021;30(3):105549.
2. Nalleballe K, Reddy Onteddu S, Sharma R, et al. Spectrum of neuropsychiatric manifestations in COVID-19. Brain Behav Immun 2020;88:71-74.
3. Varatharaj A, Thomas N, Ellul MA, et al. Neurological and neuropsychiatric complications of COVID-19 in 153

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1052-3057/$ - see front matter

patients: a UK-wide surveillance study. Lancet Psychiatry 2020;7(10):875-882.
4. Benger M, Williams O, Siddiqui J, et al. Intracerebral haemorrhage and COVID-19: Clinical characteristics from a case series. Brain Behav Immun 2020;88:940-944.
5. Beyrouti R, Adams ME, Benjamin L, et al. Characteristics of ischaemic stroke associated with COVID-19. J Neurol Neurosurg Psychiatry 2020;91(8):889-891.
6. Belani P, Schefflein J, Kihira S, et al. COVID-19 is an independent risk factor for acute ischemic stroke. Am J Neuroradiol 2020;41(8):1361-1364.
7. Kihira S, Schefflein J, Chung M, et al. Incidental COVID-19 related lung apical findings on stroke CTA during the COVID-19 pandemic. J Neurointerv Surg 2020;12(7):669-672.
8. Jain R, Young M, Dogra S, et al. COVID-19 related neuroimaging findings: A signal of thromboembolic complications and a strong prognostic marker of poor patient outcome. J Neurol Sci 2020;414:116923.
9. Yaghi S, Ishida K, Torres J, et al. SARS-CoV-2 and Stroke in a New York healthcare system. Stroke 2020;51(7):2002-2011.