



ABSTRACT

Stroke Incidence in Patient with COVID-19 Infection: a rapid review

Bryan Dani Mawardi¹, Abdul Ghofir², Wahyu Wihartono³,

¹Undergraduate Program, Faculty of Medicine, Public Health, and Nursing
Universitas Gadjah Mada, Yogyakarta, Indonesia

²Department of Neurology RSUP Dr. Sardjito Yogyakarta

³Department of Neurology RSPAU Dr. S. Hardjolukito Yogyakarta

Background: Coronavirus disease 2019 (COVID-19) outbreak in Wuhan, China has become a pandemic and the number of the confirmed cases and confirmed deaths keep on rising. Incidence of several neurological symptoms and complications including stroke have been associated with COVID-19 infection. There is hypercoagulability associated with COVID-19 that is likely a sepsis induced coagulopathy and may predispose to stroke. Other than that, it is known that the SARS-CoV-2 virus binds to angiotensin-converting enzyme 2 (ACE2) which is located in brain endothelial and smooth muscle cells. ACE2 work as a counterbalance to angiotensin-converting enzyme 1 (ACE1) and angiotensin II which is proinflammatory, vasoconstrictive, and promotes organ damage. Depletion of ACE2 by SARS-Cov-2 may break the balance of the system in favor of the ACE1/angiotensin II axis and promote tissue injury including stroke.

Objective: This review is written to give a simple yet comprehensive review about how stroke incidence associated with COVID-19.

Method: The study design is a rapid systematic review of scientific literature using major databases (Pubmed) as sources to consolidate currently available evidence of incidence and clinical outcome of stroke in COVID-19 patient.

Result: All of the studies included in this paper stated that the incidence rate stroke is higher than the annual stroke incidence, with ischemic stroke as the most common stroke type. The range of the incidence rate from the table is 0.36% at the lowest and the highest is 12.8%. The in hospital mortality rate of stroke with COVID-19 patients is far above the average in hospital mortality rate of stroke with no COVID-19.

Conclusion: Incidence of stroke in COVID-19 patients is above the average numbers of annual stroke incidence. Ischemic stroke is the most common type of stroke that is reported to occur in COVID-19 patients. As for the clinical outcome, the in hospital mortality of the stroke patients induced by COVID-19 is also reported to be much higher than the available data on annual stroke mortality rate.

Keywords: Stroke, COVID-19, Incidence, Clinical Outcome, In hospital mortality rate



INTISARI

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³Department of Neurology RSPAU Dr. S. Hardjolukito Yogyakarta

Latar Belakang: COVID-19 telah dinyatakan sebagai pandemi oleh WHO pada Maret 2020 dan sejak itu, jumlah kasus positif dan kematian akibat COVID-19 terus bertambah. Manifestasi dari COVID-19 pada sistem saraf termasuk stroke telah dilaporkan pada beberapa jurnal. Mekanisme yang mungkin terjadi adalah hiperkoagulasi yang berkaitan dengan COVID-19 akan menimbulkan koagulopati yang nantinya dapat mengakibatkan stroke. Selain itu, diketahui bahwa SARS-CoV-2 virus menempel ke angiotensin-converting enzyme 2 (ACE2) yang terletak di seluruh tubuh termasuk endotelium pada otak dan otot polos. ACE 2 bekerja sebagai penyeimbang dari ACE1 and angiotensin II yang berfungsi sebagai proinflammatory, vasokonstriktif dan berpotensi untuk menimbulkan kerusakan organ. Pengurangan jumlah ACE2 oleh SARS-CoV-2 nantinya akan menimbulkan ketidakseimbangan dari sistem dan menimbulkan kerusakan jaringan termasuk stroke.

Tujuan: Penelitian ini dibuat untuk memberikan review sederhana tentang insidensi stroke yang berkaitan dengan infeksi dari COVID-19.

Metode: Penelitian ini adalah sebuah tinjauan sistematis yang dipercepat dari literatur yang tersedia di Pubmed sebagai sumber untuk melihat insidensi dan luaran dari stroke yang terjadi pada pasien dengan COVID-19

Hasil: Semua jurnal yang disertakan dalam penelitian ini menyatakan bahwa angka insidensi stroke pada pasien dengan COVID-19 lebih tinggi dibandingkan dengan angka stroke tahunan, dengan stroke iskemik sebagai tipe yang paling sering dijumpai. Rentang persentase kematian di rumah sakit pada pasien stroke dengan COVID-19 jauh lebih tinggi dibandingkan dengan pasien stroke tanpa COVID-19.

Kesimpulan: Insidensi stroke pada pasien dengan COVID-19 berada di atas rata-rata angka stroke tahunan. Untuk luaran pasien stroke dengan COVID-19, persentase angka kematian di rumah sakit jauh di atas rata-rata angka kematian tahunan akibat stroke tanpa COVID-19

Kata Kunci: Stroke, COVID-19, Insidensi, Luaran pasien, Persentase kematian di rumah sakit



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BRYAN DANI MAWARDI, dr. Abdul Ghofir, Sp.S(K)., M.Sc; dr. Wahyu Wihartono, Sp.S., M.Kes

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