# Association of COVID-19 Infection and Juvenile Stroke: a Case Series

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**Abstract**

Ischemic stroke has been increasingly reported as a consequence of COVID-19 infection. However, the underlying etiology is not well determined. The objective of this study is to discuss association of juvenile stroke with COVID-19 infection. We analyzed 5 COVID-19 positive and stroke patients with a mean age of 41.2 years-old. Three patients developed large vessel occlusion, one small vessel occlusion and one PRES with superimposed lobar ICH, respectively. The mean initial NIHSS of our patients was 11.6. Except the one with massive cerebellar infarct, a desirable outcome occurred with a mean mRS 2.6 at discharge. The mean ESR and CRP level was elevated to 30.4 ml and 32 mg/dl. The severity of COVID-19 infection was considered mainly as mild. COVID-19 infection has the potential to induce hypercoagulability state contributing to stroke development even in the mild form of disease.

***Keywords:*** Cerebrovascular Accident, CVA, Stroke, COVID-19, Novel Coronavirus

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## BACKGROUND

The novel coronavirus disease (COVID-19) first emerged in China with a cluster of unexplained pneumonia which soon has turned into a global pandemic [1,2]. There are increasingly reports of acute cerebrovascular accidents (CVA) associated with COVID-19 infection in the literature. However, the exact underlying pathophysiology is undetermined [3–5]. It is postulated that SARC-CoV 2 acts via the ACE2 (angiotensin converting enzyme II) receptor, which is heavily expressed in myocardium, vascular endothelium, and arterial smooth muscle leading to thrombogenesis. The prothrombotic state associated with increased D-dimer levels in the course of COVID-19 infection might also predispose to thrombotic events [5–7]. Interestingly, cases of juvenile stroke associated with COVID-19 have been reported despite the presence of contributing risk factors as advanced age, hypertension

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