

## NEW STROKE LIKE ONSET AND HYPER-COAGULABILITY IN COVID-19 POSITIVE PATIENTS

### NUEVO ACCIDENTE CEREBROVASCULAR COMO INICIO Y LA HIPER-COAGULABILIDAD EN COVID-19 PACIENTES POSITIVOS

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Sr. Editor:

Dear Editor, with the recent coronavirus pandemic, there have been several speculations on new stroke like symptoms in patients with COVID positive. Despite of very less evidence and no guidelines available in managing these patients in ICU's and reanimation centers. These ticking time bomb like complications are the need of the hour to investigated and immediately managed to reduce mortality in SARS COV-2 positive patients.

In my opinion, there is an evident new stroke like onset symptoms in covid positive patients and the possible mechanisms responsible for its development are below. From the view of several authors, positive patients were brought to the emergency case after having mild flu like symptoms which further deteriorated into dysarthria and bilateral limb weakness<sup>1</sup>.

Zhang et al described a patient with COVID positive symptoms and with comorbidities like hypertension, diabetes, multiple infarcts and anti phospholipid antibodies. There was a significant increase in D-dimer levels, Fibrinogen, Troponin's, aPTT and PT along with anti cardiolipin IgA antibodies and anti-β2-glycoprotein

IgA and IgG antibodies<sup>2</sup>. There is enough evidence to prove that central blood pressure and PWV can detect arterial stiffness and act as a novel vascular biomarker to reduce cardiovascular mortality. Though there is very less information, rapid testing and screening of hyper coagulation in these patients is recommended.

COVID-19 outbreak has posed a great challenge to all researchers worldwide. Panigada et al, described about the levels of D-dimers, Fibrinogen and protein C levels were drastically increased in their cohort of 24 COVID 19 positive patients<sup>3</sup>. The literature strongly suggests an acute state of hypercoagulability with hyper inflammatory state rather than Disseminated intravascular coagulation (DIC). There is a suggestive thrombo inflammation presented clinically with stroke like symptoms and confirmed with laboratory tests.

The practical guidelines issued by the International panel of specialists suggest administering a prophylactic low molecular heparin unless there is an existing active bleed or thrombocytopenia (<25000 cells/cu mm). This disease manifestation is linked to septic coagulopathy with

thrombo inflammation and protection against venous thromboembolism<sup>4</sup>. Laboratory confirmatory tests should provide more information and evidence in these patients to reduce the mortality.

The European Society of Cardiology released ESC guidance for the diagnosis and management of cardiovascular disease during the COVID-19 pandemic, they described the pathophysiology and possible mechanisms on how the novel coronavirus affects the cardiovascular system. The cardiovascular risk is significantly doubled in COVID positive patients. The pathobiology of the disease is that the viral infection causes a dysregulation of the RAAS/ACE2 system. This could further lead to rise in blood pressure and hypertensive emergency or urgency based on their existing comorbidities<sup>5</sup>.

Several authors reported a cytokine storm in turn causing micro and macro vascular damage leading to plaque instability and rupture. This further deteriorates the patients clinical course with further cardiovascular complications (Acute coronary syndrome, Myocarditis, cardiac arrest). Multi organ

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failure due to septic shock, stroke like<sup>3</sup> symptoms, Acute renal failure, pulmonary embolism, DIC syndrome are most common cause of death reported<sup>6</sup>.

Gheorge Fronea et al, in their study described about early vascular ageing in 60 patients with acute coronary syndrome. Their study concluded with increased arterial stiffness levels and higher vascular ageing levels when compared with healthy subjects<sup>7</sup>.

Avula et al, in their study presented 4 cases of COVID-19 with neurological symptoms registered with radiological evidence of acute stroke. They speculated the mechanism of acute stroke occurrence as cardioembolic or arterio-arterial thromboembolism<sup>8</sup>.

Vascular and cardiac adverse events are directly linked to increased arterial stiffness and central blood pressure. Vamsi et al, their prospective study on resistant hypertensive patients measured the central blood pressure and arterial stiffness using a non-invasive Oscillometric device for the first time<sup>9</sup>. But, could PWV, the novel biomarker predict mortality in COVID patients as well? This still remains a controversy and is answered only through longitudinal prospective studies.

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