

Recommendation for thrombolytic treatment of acute ischemic stroke in patients with covid-19.

INTRODUCTION.

In Chile, as in the rest of the world, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has substantially modified the functioning of health systems focusing attention in how to handle the coronavirus infections^{1,2,3}. In this context, health systems are facing three challenges: face the pandemic; ensure the attention to other pathologies not related to coronavirus disease (COVID-19), which will maintain their prevalence; and the attention of new and complex medical situations, such as those in which COVID-19 positive patients present complications of the disease and/or derived from other diseases, leading to high mortality scenarios^{4,5,6}.

In the case of acute ischemic stroke (AIS) and COVID-19, patients can: develop a stroke while being a contact of a COVID-19 positive patient; have an infection from COVID-19 and a concomitant stroke; or developing a stroke as a possible complication of the COVID-19 infection, which occurs more frequently in patients with a more severe infection^{7,8}. It should be taken in consideration that patients with COVID-19 have a significant burden of cardiovascular risk factors, especially those hospitalized in intensive care unit⁹.

This recommendation aims to develop an acute treatment protocol for patients with an AIS and a suspicion or confirmation of a COVID-19 infection¹⁰. It is important to emphasize that this recommendation is transitory and does not replace the recommended current guidelines for AIS treatment published in the Ministry of Health protocols^{11,12}. The application time of his recommendation will be determined by the duration of the pandemic, and after it, the need to maintain this protocol in patients with COVID-19 infection, will be assessed.

ESSENTIAL POINTS OF THE RECOMMENDATION.

I.- Objective:

a.- To develop a protocol for the thrombolytic treatment of AIS in patients with a suspected or confirmed COVID-19 infection.

II.- Target population.

a.- Patients with suspicion of AIS in time window, both in emergency service and in case of hospitalization. Two groups in relation to COVID-19 infection have to be considered:

i.- Group one: asymptomatic patient. This refers to patients with no history of contact, travel, fever and / or respiratory symptoms.

ii.- Group two: suspected infection with SARS-CoV-2 or COVID-19 (+) (for more details check references)¹³.

In case a reliable anamnesis is not available, due to the absence of a family member or witness, incomplete information and / or inability to communicate with the patient, the patient has to be considered as potentially infected.

III.- Personal protective equipment (for more details check references)^{14,15,16,17,18}.

a.- Asymptomatic patient: surgical mask.

b.- COVID-19 (+) patient and / or possible COVID-19 (+): a long-sleeved disposable fluid repellent gown with rear opening, surgical face-mask (or respirators when work environments and procedures have a risk of aerosolised transmission), disposable gloves, coats that cover the cuffs, and eye protection (full-face shield or visor, polycarbonate safety spectacles or equivalent).

i.- For thrombectomy consider local protocol of operating room.

IV.- Define the COVID-19 severity before the AIS reperfusion therapy, in order to exclude patients with a high probability of poor

outcome and / or mortality, as a consequence of their respiratory and neurological symptoms^{5,6,11,18,19,20}. The following are factors of that can lead to a bad outcome:

- 1.- Age > 80 years .
- 2.- Pre-neurological condition: modified rankin score (mRS) > 3.
- 3.- COVID-19 clinical and laboratory severity criteria that suspect a bad outcome:
 - a.- Refractory hypotension.
 - b.- Respiratory failure which is non-responsive to oxygen supplementation.
 - c.- Invasive ventilation is required.
 - d.- PaO₂/FiO₂ <250 (arterial gas).

These factors should not be used in an individual or absolute way. These require an assessment in conjunction with the patient's treating team, to define whether or not the situation is safe or not to performing a AIS reperfusion therapy. In addition, it should be considered that the patient's serious clinical condition may change after medical treatment and that it needs to be redefined.

V.- Clinical evaluation.

- a.- Limit the number of members and the contact time of the healthcare team with the COVID-19 (+) patient.

VI.- Diagnostic Imaging.

- a.- Perform neuroimaging protocols according to local availability.
- b.- Maintain local neuroimaging protocols, avoiding transfers and images unnecessary and incomplete.
- c.- Perform computed tomographic angiography (CTA) of vessels of the neck and brain in the same study (a single exposition).
- d.- In case of performing a chest computed tomographic (CT) on the group two of patients (see point I.A), do it in conjunction with brain and neck imaging (a single exposure) and without delay the cerebral perfusion therapy^{21,22}.

VII.- Treatment:

- a.- Maintain treatment algorithms according to predefined local protocols.
- b.- During the first 24 hours and the treatment, perform only strictly necessary clinical controls in order to decrease the exposure of healthcare team²³.

- c.- In case tenecteplase is available, consider using it, since it requires a shorter time of administration^{24,25}.

VIII.- Hospitalization.

- a.- Hospitalization in the COVID-19 unit in charge of intensive care unit (ICU) and neurology.
- b.- During hospitalization, carry out strictly necessary clinical controls, in order to decrease exposure of health personnel.

Abbreviations in this guidance:

AIS: acute ischemic stroke

COVID-19: coronavirus disease

CT: computed tomographic

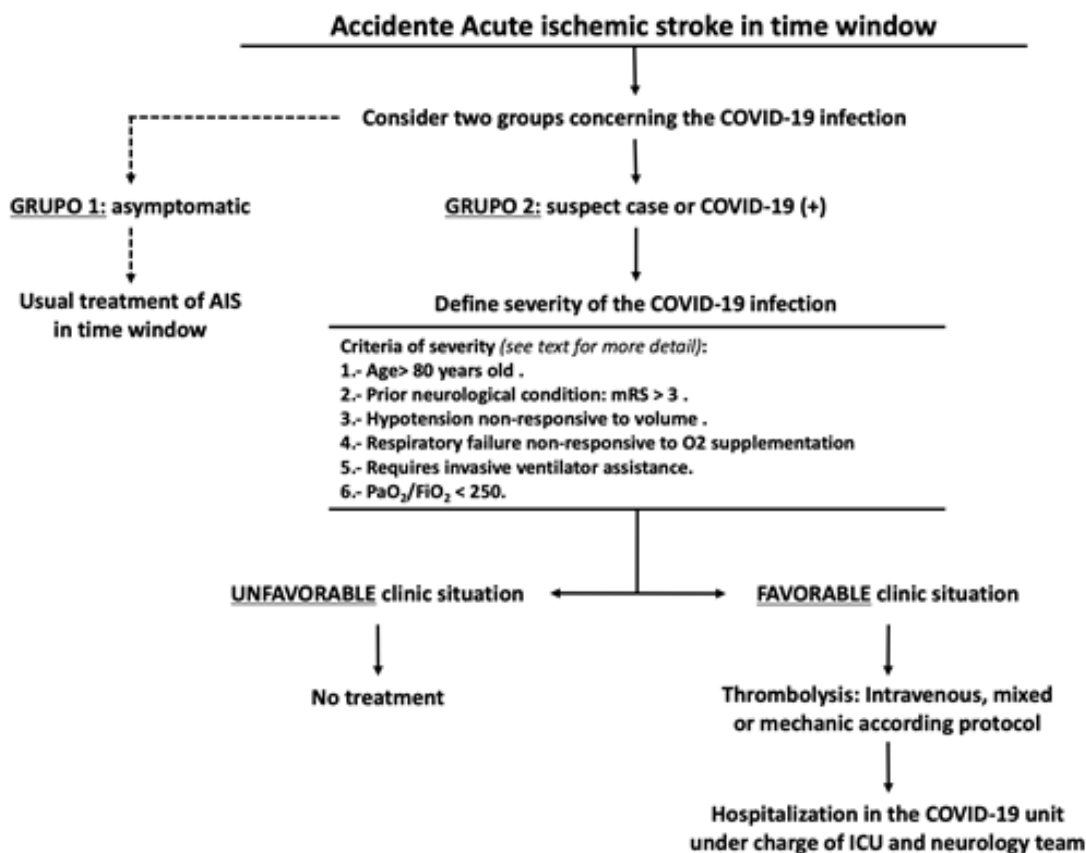
CTA: computed tomographic angiography

ICU: intensive care unit

mRS: modified rankin score

SARS-CoV-2: severe acute respiratory syndrome coronavirus 2

PROTOCOL: Thrombolytic treatment of patients with AIS and with suspicion or confirmation of SARS-CoV-2 infection.



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