

ATRIAL FIBRILLATION, A MEDICAL CHALLENGE IN TIMES OF COVID-19

Fibrilación auricular, un reto para la medicina en tiempos de COVID-19

Carlos Enrique Salgado-Fuentes¹ , Eglis Hernández Rodríguez²  

¹Guantanamo University of Medical Sciences, Baracoa Medical Sciences Branch, "Octavio de la Concepción y de la Pedraja" General Teaching Hospital, Guantanamo, Cuba.

²General Hospital "Monte Sinai", Guayaquil, Ecuador.



Citar Como: Salgado-Fuentes CE, Hernández Rodríguez E. Atrial fibrillation, a medical challenge in times of COVID-19. SPIMED [Internet]. 2022 [citado: fecha de acceso];3(1):e53. Disponible en: <http://revspimed.sld.cu/index.php/spimed/article/view/53>



Correspondencia a:
Eglis Hernández Rodríguez
Correo Electrónico:
eglis69@gmail.com

Conflicto de Intereses:

El autor declara que no existe conflicto de intereses.

Recibido: 01-03-2021

Aceptado: 03-05-2021

Publicado: 31-01-2023

Mr. Editor:

From its origin, humanity has been plagued by great epidemics that have engulfed cultures and civilizations. COVID-19 appears as a new scourge at a historical moment in which cardiovascular diseases (CVDs) constitute one of the most important health problems and the first cause of mortality in Cuba. Atrial Fibrillation (AF) is one of the most prevalent heart diseases today and in the context of COVID-19 becomes a real challenge for healthcare personnel.

There are no specific reports on the occurrence of AF during COVID-19 infection. Based on available literature, among COVID-19 patients, AF was detected in 19 % to 21 % of all cases. One study reported a prevalence of 36 % in patients with cardiovascular diseases, with AF being observed in 42 % of patients who did not survive. In a small report, up to 75 % of hospitalized COVID-19 geriatric patients had a history of AF.¹

The pathophysiology of COVID-19 related AF is not well-understood and proposed putative mechanisms that include a reduction in angiotensin-converting enzyme 2 (ACE2) receptor availability, CD147- and sialic acid-spike protein interaction, enhanced inflammatory signs, eventually culminating in inflammatory cytokine storm, direct viral endothelial damage, electrolytes and acid-base balance abnormalities in the acute phase of severe illness and increased adrenergic drive. The great variety of pathophysiological mechanisms that influence this medical entity makes adequate clinical management much more difficult, so that a large part of the physicians remain uncertain during the care of these patients.¹

A potential explanation linking severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection with AF is the higher levels of angiotensin-converting enzyme 2 (ACE2) in individuals with certain CVDs. SARS-CoV-2 penetrates human cells through direct binding with ACE2 at the cell surface. In humans, circulating ACE2 is detectable in individuals with CVD risk factors. Serum ACE2 activity is increased in patients with heart failure (HF) and correlates with disease severity. Interestingly, it has been previously described that plasma ACE2 activity levels are increased in AF and have been suggested as a better marker of disease severity in human AF. Moreover, elevated plasma ACE2 levels are also associated with older age, male gender, hypertension, vascular disease, elevated left ventricular (LV) mass, impaired LV diastolic function, and advanced atrial disease. Intriguingly, the former is also the most frequent comorbidity associated with worse prognosis in COVID-19 patients.²

Anticoagulation is one of the pillars of the treatment for atrial fibrillation. In the case of COVID-19-confirmed-positive-patients suffering from atrial fibrillation low molecular weight heparin is the anticoagulant of choice in hospitalized COVID-19 patients with AF. Direct oral anticoagulants can be used in AF with COVID-19 patients after discharge without Lopinavir/ritonavir (LPV/r). Azithromycin increases the effect of warfarin sodium, whereas ribavirin and LPV/r diminish the effect of warfarin by unclear mechanisms. In several case reports, the dose of warfarin sodium needed to be increased up to 40 % with ribavirin and 125 % with (LPV/r) to maintain international normalized ratio goal. Steroids may increase the bioavailability of warfarin, affecting international normalized ratio. It is recommended standard international normalized ratio monitoring in patients who are treated with

Palabras Clave: Fibrilación auricular; Covid-19

Keywords: Atrial fibrillation; Covid-19

COVID-19 pharmacotherapy.³

The potential complications and adverse reactions of treatment against COVID-19 have been widely addressed in the medical literature, however the interactions that appear secondary to polypharmacy in patients with FA and COVID-19 still constitute a poorly studied aspect of medical knowledge.

Contemporary therapy of AF with antiarrhythmic drugs and anticoagulants is complex and suboptimal and it is associated with substantial side effects. Little data are available on the value of rhythm and rate control strategies in AF patients with COVID-19 patients. The intensified treatment for the underlying hypoxemia along with inflammation and other reversible triggers (hypokalemia, hypomagnesaemia and acidosis), appears the empiric basis for treatment. Urgent cardioversion (performed within days) should be considered in hemodynamically instable patients (also in case of acute myocardial infarction or acute heart failure) due to new-onset AF or in whom AF may be a "participating factor". In the rest of patients, not in need of urgent cardioversion, the need for cardioversion should be balanced against the need for more equipment and personnel at the side of patients, and the possible need for intubation (with the risk of increased viral aerosol creation).^{1,3}

Notably, intravenous amiodarone can cause acute pulmonary

toxicity and severe hypotension; therefore, it should be used with caution by clinicians. Sufficient rate control may be also achieved in critically-ill patients using intravenous diltiazem. Transthoracic echocardiography should be performed if signs of heart failure, hemodynamic instability, unexplained deterioration of the clinical status, if cardiac dysfunction is suspected.^{4,5}

Considering the high prevalence of AF in Cuba, the increase in the incidence of COVID-19 and the great complexity involved in its treatment in positive patients, it is necessary to implement specific protocols that make the clinical management of these patients a more certain way.

CONTRIBUCIÓN DE AUTORÍA

CESF: Concepción de la idea, redacción crítica, aprobación de la versión final del manuscrito.

EHR: Concepción de la idea, redacción crítica, aprobación de la versión final del manuscrito.

FINANCIACIÓN

El autor no recibió financiación para el desarrollo de la presente investigación.

REFERENCIAS BIBLIOGRÁFICAS:

1. Gawalko M, Kaplon-Cieślicka A, Hohl M, Dobrev D, Lin D. COVID-19 associated atrial fibrillation: Incidence, putative mechanisms and potential clinical implications. *Int J Cardiol Heart Vasc* [Internet]. 2020 [cited 2022 Jan 4. 21];30 Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7462635/pdf/main.pdf>
2. Sanchis-Gomar F, Perez-Quilis C, Lavie CJ. Should atrial fibrillation be considered a cardiovascular risk factor for a worse prognosis in COVID-19 patients? *Eur Heart J* [Internet]. 2020 [cited 2022 Jan 21];41(32):3092-3093. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7454510/pdf/ehaa509.pdf>
3. Pattara R, Win S, Hicham EM, Sorajja D, Srivathsan K, Valverde A, et al. Guidance on Short-Term Management of Atrial Fibrillation in Coronavirus Disease 2019. *J Am Heart Assoc* [Internet]. 2020 [cited 2022 Jan 21];9(14). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7660727/pdf/JAH3-9-e017529.pdf>
4. Mujović N, Dobrev D, Marinković M, Russo V, S Potpara T. The role of amiodarone in contemporary management of complex cardiac arrhythmias. *Pharmacol Res* [Internet]. 2020 [cited 2022 Jan 21];151. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S104366181930430X?via%3Dihub>
5. Ganatra S, Sourbha SD, Shah S, Asnani A, Neilan TG, Lenihan D, et al. Management of Cardiovascular Disease During Coronavirus Disease (COVID-19) Pandemic. *Trends Cardiovasc Med* [Internet]. 2020 [cited 2022 Jan 21];30(6):315-325. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7255720/pdf/main.pdf>