

Letter to the editors



Thromboembolic risks in patients with COVID-19: major concern to consider in our management

Mazou Ngou Temgoua^{1,*}, Liliane Mfeukeu Kuate¹, William Ngatchou², Aurelie Sibetcheu³, Zouliatou Nzina Toupendi⁴, Grace Belobo⁴, Alice Ossa¹, Samuel Kingue¹

¹Faculty of Medicine and Biomedical Sciences, Department of Medicine and Specialities, Yaoundé, Cameroon, ²Faculty of Medicine and Pharmaceutical Sciences, Department of Surgery, Douala, Cameroon, ³Faculty of Medicine and Biomedical Sciences, Department of Pediatrics, Yaoundé, Cameroon, ⁴Faculty of Medicine and Biomedical Sciences, Department of Radiology and Medical Imaging, Yaoundé, Cameroon

***Corresponding author:**

Mazou Ngou Temgoua, Faculty of Medicine and Biomedical Sciences, Department of Medicine and Specialities, Yaoundé, Cameroon

Cite this article: Pan Africa Medical Journal. 2020;35(2):10. DOI: 10.11604/pamj.2020.35.2.22945

Received: 19 Apr 2020 - **Accepted:** 21 Apr 2020 - **Published:** 27 Apr 2020

Domain: Cardiology, Public health

Keywords: COVID-19, Thromboembolism risks, management

©Mazou Ngou Temgoua et al. Pan African Medical Journal (ISSN: 1937-8688). This is an Open Access article distributed under the terms of the Creative Commons Attribution International 4.0 License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Corresponding author: Mazou Ngou Temgoua, Faculty of Medicine and Biomedical Sciences, Department of Medicine and Specialities, Yaoundé, Cameroon

This article is published as part of the supplement "PAMJ Special issue on COVID 19 in Africa" sponsored by The Pan African Medical Journal

Guest editors: Dr Scott JN McNabb, Emory University (Atlanta, USA), Dr Emmanuel Nsutebu, Infectious Disease Division (Abu Dhabi), Prof Chris Dickey (New York University, USA), Dr Luchuo E. Bain (Scientific editor, the Pan African Medical Journal), Prof Eugene Sobngwi (Yaounde University, Cameroon), Prof Charles Shey Umaru Wiysonge (Cochrane South Africa) Prof Joseph C Okeibunor (WHO, Harare), Dr Raoul Kamadjou, Managing Editor, (Pan African Medical Journal, Kenya)

Available online at: <https://www.panafrican-med-journal.com/content/series/35/2/10/full>

Abstract

COVID-19 pandemic is an emergent cardiovascular risk factor and a major cause of mortality worldwide. Thromboembolism is highly suspected as a leading cause of death in these patients through vascular inflammation caused by SARS COV2. Until now there is no real treatment of COVID-19 and many proposed drugs are under clinical trials. Considering the high incidence of thromboembolic events in critically ill patients with COVID-19, prevention of this disorder should be essential in order to reduce mortality in these patients.

To the editors of Pan African Medical Journal

After Severe Acute Respiratory Syndrome Coronavirus (SARS COV) in 2003 and Middle East Respiratory Syndrome (MERS COV) in 2012, the new Coronavirus SARS COV2 is a leading infectious cause of mortality worldwide. Originating from Wuhan in China, the disease rapidly spread to 143 countries by March 2020 and is responsible for healthcare resources depletion [1]. The disease is transmitted mainly through interhuman contact through droplets, other routes of transmission like blood, urine or faeces could also be incriminated. The virus invades alveoli through spike protein(S) which links to the Angiotensin Converting Enzyme 2 (ACE2). Essential factors that determine the virulence of the pathology are: advanced age, hypertension, diabetes, obesity, cancer, pregnancy and chronic kidney disease [2]. The overall crude case fatality ratio is around 1.38%, but this proportion is more high in risk groups particularly in patients aged 80 years or older where the case fatality rate may reach 18.4%. Patients died mainly because of acute respiratory distress syndrome or septic shock [3].

Recently the role of thromboembolic events has been suspected. In a study done by Cui et al. who enrolled 81 patients in Intensive Care Unit (ICU) in China, the incidence of venous thromboembolism (VTE) in these patients was 25% with a death rate of 9.8% [4]. Klok et al. found almost the same incidence in Holland, in a total of 184 patients admitted in ICU, 27% developed thromboembolic complications [5]. The potential mechanisms associated with thromboembolism in COVID-19 could be excessive inflammation, hypoxia, immobilisation and diffuse intravascular coagulation [5]. The risk may be enhanced in patients with known thromboembolic risk factors like old age, obesity, cancer, pregnancy and could partially explain the susceptibility of death in this population [3]. Tang et al. in China also found that high levels of D-dimers were linked to poor prognosis of patients and that prophylactic use of heparin for at least 7 days significantly reduced death [6]. Patients with COVID-19 can rapidly develop severe complications such as renal and pulmonary failure, liver dysfunction which can affect both VTE and bleeding status [2,7].

Since COVID-19 patients with high risk of VTE had poor outcomes compared to those with low risk, the thromboembolism risk should be accurately evaluated [8]. Many comprehensive scores such as Caprini, Padua had been proposed for the VTE and bleeding risk assesment in various clinical settings [7-9]. Given the increase risk of thromboembolism in COVID-19 patients particularly those in ICU, it is important to implement prophylactic use of anticoagulation and/or mechanical compression stockings in order to prevent death of these patients. Unfortunately, a recent study in China showed that this recommendation is not always respected [8]. It should also be noted that there is a corresponding increase in the risk of bleeding due to the sepsis in these patients. Tang et al. found that COVID-19 patients who died in ICU have longer prothrombin time and activated partial thromboplastin time [10]. So it is also very important to assess the risk of bleeding in patients before the use of anticoagulation.

Thromboembolism is highly prevalent in COVID-19 patients and contributes as an important cause of death. Prophylactic measures to prevent it's incidence should be implemented in all protocols however bearing in mind the risk of bleeding.

should be paid to venous thromboembolism prophylaxis in the management of COVID-19. *The Lancet Haematology*. 2020 Apr 9.

8. Barbar S, Noventa F, Rossetto V, Ferrari A, Brandolin B, Perlati M et al. A risk assessment model for the identification of hospitalized medical patients at risk for venous thromboembolism: the Padua Prediction Score. *Journal of Thrombosis and Haemostasis*. 2010 Nov;8(11):2450-7.
9. Golemi I, Salazar Adum JP, Tafur A, Caprini J. Venous thromboembolism prophylaxis using the Caprini score. *Disease-a-Month*. 2019 Aug;65(8):249-98.
10. Tang N, Li D, Wang X, Sun Z. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *J Thromb Haemost*. 2020;18(4):844-7.

Competing interests

The authors declare no competing interests.

Authors' contributions

Study conception: MNT, LMK, WN; mansucript writing: MNT; critical revision: AS, NTZ, GB, AO; supervision: SK. All the authors have read and agreed to the final manuscript.

References

1. WHO. *Coronavirus disease 2019 (COVID-19) Situation Report - 55*. 2020. Accessed on 2020 Mar 16
2. Guan W, Ni Z, Hu Y, Liang W, Ou C, He J et al. Clinical characteristics of coronavirus disease 2019 in China. *New England Journal of Medicine*. 2020 Feb 28.
3. Verity R, Okell LC, Dorigatti I, Winskill P, Whittaker C, Imai N et al. Estimates of the severity of coronavirus disease 2019: a model-based analysis. *The Lancet Infectious Diseases*. 2020 Mar 30.
4. Cui S, Chen S, Li X, Liu S, Wang F. Prevalence of venous thromboembolism in patients with severe novel coronavirus pneumonia. *Journal of Thrombosis and Haemostasis*. 2020 Apr 9.
5. Klok FA, Kruip MJHA, Van der Meer NJM, Arbous MS, Gommers DAMPJ, Kant KM et al. Incidence of thrombotic complications in critically ill ICU patients with COVID-19. *Thrombosis Research*. 2020 Apr 10.
6. Tang N, Bai H, Chen X, Gong J, Li D, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. *Journal of Thrombosis and Haemostasis*. 2020 Mar 27.
7. Wang T, Chen R, Liu C, Liang W, Guan W, Tang R et al. Attention