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Letter to editor

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The potential protective role of oral anticoagulant therapy in covid-19 patients: the Dolo-Venice Hospital experience in Italy

Abstract

The COVID-19 pandemic is known to cause pneumonia with heterogeneous symptoms such as fever, cough and dyspnoea but also inducing systemic side effects such as a coagulopathy disorders up to serious complications due to systemic and pulmonary artery thrombosis. This phenomenon is probably due to host immune response and in particular to endothelial damage. In a full COVID19 hospital in Venice Italy, we evaluated retrospectively some clinical characteristics of the patients infected by the coronavirus (SARS-Cov-19). Our preliminary observations revealed a favourable relationship between the oral anticoagulation (OAC) therapy before the admission and a positive outcome. In fact, only a very small number of patients in therapy with OAC were admitted to our semi-intensive care department, suggesting the potentially protective role of this treatment against fatal thrombotic complications.

Keywords: COVID-19, D-dimer, oral anticoagulant, pulmonary artery thrombosis, prognosis

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Introduction

From the beginning of the COVID-19 outbreak in December 2019 in China, many theories and observation findings of fatal outcomes were proposed to clarify a higher mortality within patients, especially among the young, infected by SARS-Cov-2 compared to previous pandemic flu outbreaks.[1] Recent data from cohort studies and autopsies have highlighted a potentially precipitant role of coagulopathy disorder in provoking death due to hypercoagulation status, and pulmonary artery microthrombosis.[2,3] This phenomenon is probably exacerbated by the host's immune response, cytokine storm and vascular endothelial damage induced by virus infection.[4,5] In this setting, the potentially protective role of oral anticoagulant (OAC) therapy has become a relevant new topic for clinical trials and research.[6–8]

Letter to editor

We proposed our findings based on a preliminary analysis of data collected during the first two months of pandemic in a full Covid Hospital in Venice,[9] Italy. In order to better understand cardiovascular complications and vascular pulmonary involvement, ultrasensitive troponin T (Hs-cTn), NT-proBNP and D-Dimer were tested in all patients with a positive Coronavirus swab. For those with very abnormal values of D-dimer, whenever possible, a transthoracic echocardiography and/or a CT pulmonary angiography were performed in order to exclude acute pulmonary embolism. From 1st of March, 283 patients were admitted to our hospital with a positive coronavirus oropharyngeal swab, highly suspicious symptoms of pneumonia (fever, cough, dyspnoea) and chest X-ray evidence of lung involvement. In our department 46 patients died from Covid-19 pneumonia, with a mean age of 72±13 years old, mostly male (68%), and about 90% of the total had a very high D-dimer value (four to five times the upper normal limits). On the other hand, only 5% of the survivors showed an abnormal D-dimer value. Abnormal Hs-cTn values were found in 21% of the COVID19 positive group and about 32% had an increase in NT-proBNP. An important issue that we observed is that 45 patients (16%) testing positive for Covid-19 and infectious at admission were in home therapy with oral anticoagulation treatment for previous diagnosis of non-valvular atrial fibrillation. They took prevalently (88%) factor X inhibitor drugs (DOACS: rivaroxaban, edoxaban, apixaban) and 12% with vitamin K antagonist (VKA). In this subgroup, only four patients (9%) died and the remaining 41 (91%) had shorter hospitalization, about 2 days less compared to patients of similar age in sinus rhythm without indications for OAC therapy, and none had haemorrhagic complications.

Discussion

Anticoagulation therapy could represent a good therapeutic barrier to coronavirus complications, in particular for pulmonary artery microthrombosis which may be the principal cause of persistent hypoxemic status despite high flow oxygen administration or invasive ventilation.[10] Treatment with heparin may be helpful in mitigating this pulmonary coagulopathy. A recent meta-analysis noted that adjunctive treatment with LMWH within the initial 7-day onset of ARDS reduces the risk of 7-day mortality by 48% and the risk of 28-day mortality by 37%.[11] Our preliminary observations seem to confirm this positive relationship between anticoagulation and a better clinical outcome and for this reason we would like to underline the fact that not only heparin

administration, but also OAC (DOACs and AVK) play a pivotal role in protecting patients from thrombotic complications. We therefore suggest continuing OAC home therapy in COVID19 patients, keeping in mind the potential bleeding risks and drug interaction.[12]

Conclusion

Nowadays there is a lack of evidence as to whether pulmonary artery thrombosis could be a predisposing factor for pulmonary artery hypertension, and for this reason we suggest conducting initial combined ultrasound evaluation of the heart and lungs,[13] and, in particular, attempting to estimate pulmonary systolic artery pressure because our limited experience shows that, in cases with similar levels of pneumonia lung involvement, the difference in terms of prognosis is made by the presence of pulmonary artery hypertension, which can condition greatly the outcome especially in the younger patients.

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Conflicts of interest

Author declares that there are no conflicts of interest.

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