Title: Venous thromboembolism in COVID-19 patients.

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Dear Editor,

We read with interest the study published by Tang and coll.[1] in a recent issue of the Journal of Thrombosis and Haemostasis. In this retrospective analysis, conducted at the Tongji Hospital of Wuhan, China, it is reported that heparin treatment reduces mortality in subjects affected by severe COVID-19 who have "sepsis-induced coagulopathy". The definition of severe COVID-19 was the presence of at least one of following: respiratory rate ≥30 breaths /min; arterial oxygen saturation ≤93% at rest; PaO2/FiO2 ≤300 mmHg. The Authors of this study also reported that, among subjects not treated with heparin, mortality raised according with D-dimer levels. Of note, patients that received heparin in this study were mostly treated with enoxaparin, at the thromboprophylactic dose of 40-60 mg/day, for at least 7 days.

We are surprised that only 22.0% of the population analyzed by Tang and coll. (99 patients on a total of 449) received anticoagulant therapy for the prevention of venous thromboembolism (VTE). Indeed, patients hospitalized for COVID-19, and in particular those with a "severe" disease, are by definition at increased risk for VTE. Considering that these patients had respiratory failure, were likely bedridden for oxygen supplementation, and had an acute respiratory infection, their PADUA score [2] was necessarily ≥4, without even taking into account the possibility that some of them could have cancer, history of previous VTE, and age >70 years. Based on this, it is possible to hypothesize that, among the 350 patients that did not receive heparin (or were treated for less than 7 days), some developed pulmonary embolism (EP), which could have contributed to mortality in this group. Such hypothesis is strengthened by the fact that mortality correlates with D-dimer levels among heparin non-users, although we are aware that high D-dimer levels may be due to many factors in COVID-19 patients and do not necessarily depend on the presence of VTE.

It would be helpful to know whether heparin users and non-users differed in terms of PADUA score. Also, it would interesting if the Authors could retrospectively reanalyze their study population to determine how many patients were screened for VTE by ultrasonography of the legs

and/or CT scan pulmonary angiography, and assess whether VTE was more frequent among subjects who did not receive thromboprophylaxis with heparin, compared to heparin-treated individuals.

CONFLICT OF INTERESTS

The authors declare no conflicts of interest in association with this study.

AUTHOR CONTRIBUTION

Angelo Porfidia and Roberto Pola equally contributed to this article. Both authors discussed, commented, and finally approved the manuscript.

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