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Elevated D-dimers and lack of anticoagulation predict PE in severe COVID-19 patients

Basile Mouhat ¹, Matthieu Besutti¹, Kevin Bouiller^{2,3}, Franck Grillet ⁴, Charles Monnin¹, Fiona Ecartot^{1,5}, Julien Behr⁴, Gilles Capellier^{5,6}, Thibaud Soumagne⁶, Sébastien Pili-Floury^{5,7}, Guillaume Besch^{5,7}, Guillaume Mourey^{8,9}, Quentin Lepiller¹⁰, Catherine Chirouze ^{2,3}, François Schiele ^{1,5}, Romain Chopard^{1,5,11} and Nicolas Meneveau^{1,5,11}

Affiliations: ¹Dept of Cardiology, University Hospital, Besançon, France. ²Infectious and Tropical Diseases Unit, University Hospital, Besançon, France. ³UMR CNRS 6249 Chrono-Environnement, University of Franche-Comte, Besançon, France. ⁴Dept of Radiology, Besançon University Hospital, Besançon, France. ⁵Research Unit EA3920, University of Franche-Comte, Besançon, France. ⁶Medical Intensive Care Unit, University Hospital, Besançon, France. ⁷Anesthesia and Surgical Intensive Care Unit, University Hospital, Besançon, France. ⁸Hematology Unit, University Hospital, Besançon, France. ⁹INSERM UMR 1098, University of Franche-Comte, Besançon, France. ¹⁰Virology Laboratory, University Hospital, Besançon, France. ¹¹Both authors contributed equally.

Correspondence: Nicolas Meneveau, Dept of Cardiology, University Hospital Jean Minjot, 3 Boulevard Fleming, 25000 Besançon, France. E-mail: nicolas.meneveau@univ-fcomte.fr

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We studied predictors of pulmonary embolism in severe COVID-19 and found that D-dimer level and lack of any anticoagulant therapy were associated with a 17-fold and four-fold increase in PE, respectively, in COVID-19 patients with clinical signs of severity <https://bit.ly/2ETfAfo>

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) may predispose to venous thromboembolism. We determined factors independently associated with computed tomography pulmonary angiography (CTPA)-confirmed pulmonary embolism (PE) in hospitalised severe COVID-19 patients.

Methods: Among all (n=349) patients hospitalised for COVID-19 in a university hospital in a French region with a high rate of COVID-19, we analysed patients who underwent CTPA for clinical signs of severe disease (oxygen saturation measured by pulse oximetry $\leq 93\%$ or breathing rate ≥ 30 breaths·min⁻¹) or rapid clinical worsening. Multivariable analysis was performed using Firth penalised maximum likelihood estimates.

Results: 162 (46.4%) patients underwent CTPA (mean±SD age 65.6±13.0 years; 67.3% male (95% CI 59.5–75.5%). PE was diagnosed in 44 (27.2%) patients. Most PEs were segmental and the rate of PE-related right ventricular dysfunction was 15.9%. By multivariable analysis, the only two significant predictors of CTPA-confirmed PE were D-dimer level and the lack of any anticoagulant therapy (OR 4.0 (95% CI 2.4–6.7) per additional quartile and OR 4.5 (95% CI 1.1–7.4), respectively). Receiver operating characteristic curve analysis identified a D-dimer cut-off value of 2590 ng·mL⁻¹ to best predict occurrence of PE (area under the curve 0.88, p<0.001, sensitivity 83.3%, specificity 83.8%). D-dimer level >2590 ng·mL⁻¹ was associated with a 17-fold increase in the adjusted risk of PE.

Conclusion: Elevated D-dimers (>2590 ng·mL⁻¹) and absence of anticoagulant therapy predict PE in

hospitalised COVID-19 patients with clinical signs of severity. These data strengthen the evidence base in favour of systematic anticoagulation, and suggest wider use of D-dimer guided CTPA to screen for PE in acutely ill hospitalised patients with COVID-19.