Complete title: Value of a secretomic approach for distinguishing patients with COVID-19 viral pneumonia among patients with respiratory distress admitted to intensive care unit Shortened title: Secretomic to distinguish COVID-19 patients

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Abstract

Introduction : In intensive care units, COVID-19 viral pneumonia patients (VPP) present symptoms similar to those of other patients with non-viral infection (NV-ICU). To better manage VPP, it is therefore interesting to better understand the molecular pathophysiology of viral pneumonia and to search for biomarkers that may clarify the diagnosis. The secretome being a set of proteins secreted by cells in response to stimuli represents an opportunity to discover new biomarkers. *Aims :* Identify secretomic signatures of VPP with those NV-ICU. *Methods :* Plasma samples and clinical data from NV-ICU (n=104), VPP (n=30) or healthy donors (HD, n=20) were collected at Nantes Hospital (France) upon admission. Samples were enriched for the low-abundant proteins and analyzed using non-target mass spectrometry. Specifically deregulated proteins (DEP) in VPP *versus* NV-ICU were selected. Combinations of 2 to 4 DEPs were established. *Results :* The differences in secretome profiles of the VPP and NV-ICU groups were highlighted. Forty-one DEPs were specifically identified in VPP compared to NV-ICU. Five combinations of 3 proteins with a receiver operating characteristic curve presenting an area under the curve of 95.0% were identified. *Conclusion*: This study identifies five combinations of candidate biomarkers in VPP compared to NV-ICU that may help distinguish the underlying causal molecular alterations.

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