



Altered pulmonary blood volume distribution as a biomarker for predicting outcomes in COVID-19 disease

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BV5% derived from chest CT may serve as an imaging biomarker for predicting adverse outcomes in patients with COVID-19 seeking acute medical care <https://bit.ly/2Zg18Vv>

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Abstract

Introduction Evidence suggests that vascular inflammation and thrombosis may be important drivers of poor clinical outcomes in patients with COVID-19. We hypothesised that a significant decrease in the percentage of blood volume in vessels with a cross-sectional area between 1.25 and 5 mm² relative to the total pulmonary blood volume (BV5%) on chest computed tomography (CT) in COVID-19 patients is predictive of adverse clinical outcomes.

Methods We performed a retrospective analysis of chest CT scans from 10 hospitals across two US states in 313 COVID-19-positive and 195 COVID-19-negative patients seeking acute medical care.

Results BV5% was predictive of outcomes in COVID-19 patients in a multivariate model, with a BV5% threshold below 25% associated with OR 5.58 for mortality, OR 3.20 for intubation and OR 2.54 for the composite of mortality or intubation. A model using age and BV5% had an area under the receiver operating characteristic curve of 0.85 to predict the composite of mortality or intubation in COVID-19 patients. BV5% was not predictive of clinical outcomes in patients without COVID-19.

Conclusions The data suggest BV5% as a novel biomarker for predicting adverse outcomes in patients with COVID-19 seeking acute medical care.

