

## PREDICTORS OF VENOUS THROMBOEMBOLISM IN COVID-19 PATIENTS: RESULTS OF THE COVID-19 BRAZILIAN REGISTRY

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**Resumo:** Previous studies that assessed risk factors for venous thromboembolism (VTE) in COVID-19 patients have shown inconsistent results. Our aim was to investigate VTE predictors by both logistic regression (LR) and machine learning (ML) approaches, due to their potential complementarity. This cohort study of a large Brazilian COVID-19 Registry included 4120 COVID-19 adult patients from 16 hospitals. Symptomatic VTE was confirmed by objective imaging. LR analysis, tree-based boosting, and bagging were used to investigate the association of variables upon hospital presentation with VTE. Among 4,120 patients (55.5% men, 39.3% critical patients), VTE was confirmed in 6.7%. In multivariate LR analysis, obesity (OR 1.50, 95% CI 1.11-2.02); being an ex-smoker (OR 1.44, 95% CI 1.03-2.01); surgery  $\leq$  90 days (OR 2.20, 95% CI 1.14-4.23); axillary temperature (OR 1.41, 95% CI 1.22-1.63); D-dimer  $\geq$  4 times above the upper limit of reference value (OR 2.16, 95% CI 1.26-3.67), lactate (OR 1.10, 95% CI 1.02-1.19), C-reactive protein levels (CRP, OR 1.09, 95% CI 1.01-1.18); and neutrophil count (OR 1.04, 95% CI 1.005-1.075) were independent predictors of VTE. Atrial fibrillation, peripheral oxygen saturation/inspired oxygen fraction (SF) ratio and prophylactic use of anticoagulants were protective. Temperature at admission, SF ratio, neutrophil count, D-dimer, CRP and lactate levels were also identified as predictors by ML methods. By using ML and LR analyses, we showed that D-dimer, axillary temperature, neutrophil count, CRP and lactate levels are risk factors for VTE in COVID-19 patients.

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