Echocardiogram in critically ill patients with COVID-19 – ECOVID Study

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Abstract

Purpose: Describe echocardiographic characteristics in patients admitted to intensive care unit by COVID-19 and identify clinical and laboratory findings associated with an abnormal echocardiogram. Methods: Included all patients with RT-PCR-confirmed COVID-19 who underwent echocardiography during hospitalization. Echocardiographic characteristics were assessed in entire population and in subgroups. We also analyzed clinical characteristics associated with an abnormal echocardiogram. An echocardiogram was defined as abnormal when it demonstrates systolic ventricular dysfunction of any degree (left and/or right ventricle) and/or high filling pressures (E/E' ratio> 16; SPAP> 40mmHg, RAP> 15mmHg or diastolic dysfunction [?] grade 2) and/or moderate to severe pericardial effusion. Clinical variables were also assessed using classification tree and binary logistic regression was performed with characteristics that showed a statistical significance in univariate analysis. Results: 272 admissions to ICU by COVID-19 were identified. Of these, 159 underwent echocardiography (58.5%). 39 were excluded by incomplete demographic data. 72 echocardiograms (60%) were abnormal according to pre-established criteria. Low occurrence of left and right ventricular systolic dysfunction was observed, as well as 30.8% of the population had normal diastolic function. In univariate analysis, characteristics associated with abnormal echocardiogram were age, elevated troponin, previous heart failure and SAPS3 score. In regression model, troponin was the independent marker of abnormal echocardiography in patients admitted to the intensive care unit by COVID19. This finding was corroborated by the classification tree. Conclusions: Many manifested elevated ventricular filling pressures, but the occurrence of ventricular dysfunction was low. Elevated serum troponin level was the independent marker associated with an abnormal echocardiogram.

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