

Myocardial Ischaemia During Ventilator Weaning



Weaning is a critical process for patients in intensive care. Weaning failure can result in poor outcomes and prolonged weaning which in turn can increase the risk of death. One of the main mechanisms of weaning failure is weaning-induced cardiac pulmonary oedema (WiPO). While advances in diagnosis have been made using tools such as bedside echocardiography or biomarkers, the underlying mechanisms of WiPO still remain unclear. Weaning-included cardiac ischaemia (WiCI) might be a factor but the relationship between WiCI and weaning outcomes is also unclear.

A study was conducted to determine how WiCI contributes to weaning failure from cardiac origin. The study included 208 patients who were mechanically ventilated for at least 24 hours and had failed a first spontaneous breathing trial (SBT). Four intensive care units of secondary and tertiary hospitals in France participated in this study. There were no specific therapeutic interventions recommended to the clinician after the failure of the first SBT. A second SBT was performed within 24 hours after the first SBT in all study patients. Patients who succeeded the second SBT were extubated. Study patients were classified into three groups: short weaning (successful weaning or death within 1 day after the first SBT), difficult weaning (successful weaning or death after more than 1 day but less than seven days after SBT), and prolonged weaning (successful weaning or death after seven days following the first SBT).

WiPO was defined on the basis of three criteria: echocardiographic signs of increased left atrial pressure, increase in B-type natriuretic peptides, or increase in protein concentration during SBT as per the conservative model (when at least two criteria are fulfilled) and liberal definition (when at least one criterion is fulfilled). WiCI was diagnosed as per the definition of myocardial infarction by the European Society of Cardiology (ESC) and the American Heart Association (AHA).

As per the findings, WiPO occurred in 59.6% of patients who failed a first SBT according to the liberal definition and in 21.2% patients according to the conservative definition. In patients with ST monitoring, WiCI was diagnosed in 20.3% according to the ESC definition and in 6.8% patients according to the AHA definition.

While the prevalence of WiPO and WiCI were not negligible, the association observed in the study was weak. WiPO occurred more significantly in critically ill patients who failed a first SBT, but WiCI was less frequent. Overall, findings show that WiCI was not associated with WiPO and was also not associated with weaning outcomes.

Source: [Critical Care](#)

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