

**Noninvasive Assessment of Weaning
Failure from Mechanical Ventilation in
Critically Ill Patients**
Thesis

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Critical Care Medicine

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ABSTRACT

Background: Increased time on mechanical ventilation is associated with higher mortality rates. Weaning predictors were studied in an attempt to evaluate the outcome of removing ventilatory support. Weaning predictors were studied in an attempt to evaluate the outcome of removing ventilatory support. The **Aim** of present study was to evaluate role of the following parameters. NT-proBNP, weaning indices (RSBI, Cst and IWI) and echocardiography with use of tissue Doppler imaging (left and right ventricular function was assessed by LVEF, grade of mitral regurg if any, E/A, DT, E', E/E', TAPSE and RVFAC) as predictor tools of weaning failure in critically ill patients from mechanical ventilation. Patients who failed SBT showed (before SBT): significantly longer MV duration, significant decrease in PaO₂, SaO₂ and PaO₂/FiO₂, and significant increase in RSBI, significant decrease in IWI and significant decrease in Cst. **Results:** Patients who failed SBT showed (After SBT): Significant increase in MAP, pulse and RR, Significant increase in NT-proBNP levels, significant increase CO, no difference incidence of systolic dysfunction, significant shortage in DT, significant lowering E' velocity, significant increase E/E' and diastolic dysfunction incidence, significant increase incidence of moderate and severe MR, significant increase PCOP and significant decrease in follow up TAPSE and RVFAC. A cutoff value of 69 for RSBI, 54.7 for IWI and 46.6 for Cst predicting weaning failure with good sensitivity and specificity. A cutoff value of 9.23 for E' and 9.65 for E/E' predicting weaning failure.

Conclusion: Patients who failed SBT had higher mortality rate compared to successful SBT. Patient who failed SBT showed high incidence of weaning failure. So, it is crucial to use regularly weaning predictors during weaning process.

Key words: mechanical ventilation, weaning, echocardiography, tissue Doppler

