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Echocardiographic assessment during weaning from mechanical ventilation: pressure support ventilation versus T-tube

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Introduction Physiologic changes occurring during transition from mechanical ventilation (MV) to spontaneous ventilation can overload the cardiorespiratory system and cause difficulties in the weaning process. There are few reports studying myocardial function during weaning from MV.
Objective To evaluate cardiorespiratory parameters and cardiac function during weaning from MV.
Methods Patients under MV for more than 48 hours and prone to weaning were observed during 30 min of pressure support ventilation (PSV) and T-tube, in a random order, and with a rest period of at least 30 min between methods. Variables analyzed were: age, APACHE score, underlying disease, period of MV, length of stay (LOS) in ICU and hospital, basal ventilatory parameters, cardiorespiratory parameters in the first and 30th min, ECG, echocardiogram and blood gas analysis in the 30th minute in both methods. Echocardiographic parameters, obtained at the end of expiration with the patient in a position offering the best window, included: measurements of heart cavities; ejection fraction; acceleration of the E wave of mitral inflow (MI); deceleration of the E wave of MI; duration of the A wave of MI; isovolumetric relaxation time (IRT); mitral E/A ratio and myocardial performance index (MPI). Values obtained during PSV and T-tube were compared using a *t* test.
Results Sixteen patients (mean age 53 ± 20 years and APACHE score 17 ± 6) have been analyzed up to now. The majority of patients had neurologic diseases. The period of MV was 25 ± 25 days and the LOS in the ICU was 35 ± 35 days. Twelve patients were extubated and four failed during the T-tube trial. Comparisons between PSV and T-tube showed similar results concerning cardiorespiratory parameters as well as echocardiographic measurements. The difference between patients that failed and those successfully extubated was a lower level of PaO2 as well as a higher value of rapid shallow ventilation index during T-tube.
Conclusions In our preliminary results in this group of patients under weaning from mechanical ventilation, echocardiographic assessment of cardiac function showed no differences when comparing PSV with T-tube.