Brain natriuretic peptide as a predictor of weaning from mechanical ventilation in patients with respiratory illness

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Abstract:

Background: Cardiovascular dysfunction has been reported as an important mechanism of weaning failure. Brain natriuretic peptide (BNP) is a sensitive and specific marker for cardiovascular dysfunction. Objective: To determine the value of BNP levels measured at initiation and end of a 2 h spontaneous breathing trial (SBT) as a predictor of successful weaning of mechanical ventilation in patients with respiratory illness. Patients and methods: Thirty consecutive patients ready for weaning were prospectively enrolled in this cross-sectional analytic study over a 6-month period. All patients had been on spontaneous mode of weaning for at least 2 h. Tidal volume, respiratory rate, rapid shallow breathing index (RSBI), minute ventilation and PaO2/FiO2 were observed at initiation of SBT. BNP was measured at the initiation (BNP1) and at the end of SBT (BNP2). Weaning failure is defined as either the failure of SBT or the need for reintubation within 48 h following extubation. Results: Out of the 30 included patients, 14 (46.6%) patients had failed weaning. PaCO2 and BNP2 were significantly higher in the patients with failed weaning as compared to those with successful weaning (P = 0.025, P = 0.031 respectively). However, BNP1 levels were not statistically significant between the 2 groups (P = 0.722). On multiple regression analysis, BNP% (percent change in the BNP level during the 2-h SBT) was the only predictor of weaning success. As compared to other weaning parameters, BNP% ≤ 14.9 had the best sensitivity, specificity, positive and negative predictive value. Conclusion: Measuring the percentage change in the BNP level during a SBT may be a good predictor of weaning success from mechanical ventilation in respiratory patients.

Keywords:

Weaning Spontaneous breathing trial BNP Mechanical ventilation

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