

Comparison of Pro-BNP and Vascular Pedicle Width in Diagnosis of Volume Overload in Intensive Care Unit (ICU)

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Abstract

Introduction: Fast diagnosis and management of volume overload in critical ill patients are important. Although patients with overload manifests dyspnea or other signs, but clinical diagnosis of volume overload is challenging. This study was aimed to evaluate the correlation between serum level of Pro-BNP and vascular pedicle width (VPW) in overload patients admitted to the intensive care unit without underlying renal and liver diseases.

Methods: In this analytical cross-sectional study, portable chest X-Ray was obtained from patients admitted to the ICU of Imam-Reza Hospital and 40 patients with volume overload were selected. The VPW (millimeter) and serum level of Pro-BNP were measured. Data were entered in SPSS software and the correlation between VPW and Pro-BNP was evaluated considering the confounders.

Results: Forty patients with the mean age of 46.4 years were evaluated (15 male and 25 female patients). The mean serum Pro-BNP level was significantly more in females compared to the males. There was no significant correlation between Pro-BNP and VPW, but this correlation was significant in male patients. The mean serum Pro-BNP was significantly more in CHF patients. The Pro-BNP could differentiate CHF and non-CHF patients with 71.4% sensitivity and 65.4% specificity in 3974 cut-off. There was a significant negative linear correlation between PaO₂ with Pro-BNP and VPW. The mean Pro-BNP was significantly less in patients with more urine output.

Conclusion: According to the results Pro-BNP level seems unreliable for predicting overload in the ICU. Thus it is better to use both clinical and para-clinical findings. Results also showed more reliability of Pro-BNP in males and benefit of Pro-BNP in differentiation of CHF and appropriate urine output.

Keywords: Volume overload, vascular pedicle width, critically ill patients in ICU, Pro-BNP

