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Abstract

Evaluation of Volume Load and its Impact on Prognosis of Patients with Heart Failure

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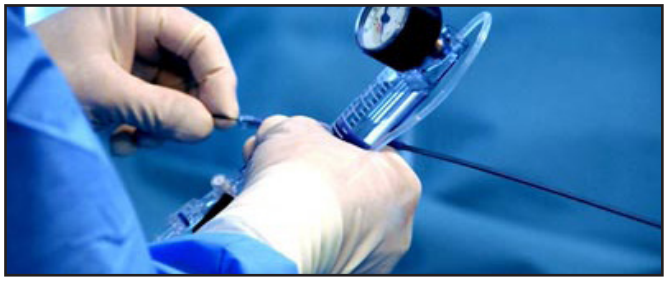
Abstract:

Background The most common cause of hospitalization of patients with heart failure (HF) is the congestion with volume overload. However, it is challenging to assess the status of volume load of HF patients. With the advancement of the medical science, new techniques and approaches are constantly emerging. More and more studies have shown that B-lines of Lung Ultrasound (LUS) can be used in the clinical practice of evaluation of the pulmonary congestion as a quick, invasive and semi-quantitative monitoring method. In addition, inferior vena cava and pleural effusion may also be used to evaluate the volume load of HF patients. How to use these indicators to evaluate the volume load of HF patients and the prognostic value of these parameters for HF are worth further exploring. Objective To investigate the assessment of the volume load of hospitalized heart failure patients and its impact on prognosis of patients with heart failure. Methods A prospective cohort of patients with acute decompensated HF were enrolled within 6 months, who were admitted to West China Hospital, in China. On the day of admission and discharge, measurement of NT-proBNP, echocardiography, lung ultrasound, pleural effusion, ultrasonography of inferior vena cava was performed. By combining the above parameters, we created TaPUS ultrasonic congestion score system to comprehensively evaluate the status of volume load of HF patients. Patients were followed up to 6 months for the composite endpoint of all-cause death and HF rehospitalization. Results A Total of 148 patients were recruited for analysis (60±14 years, 71% male). After standardized treatment during the hospitalization, left ventricular ejection fraction (LVEF) [33 (26, 42) vs 35 (28, 45), P < 0.001), B-lines [8 (2, 18) vs 4 (2, 11), P < 0.001], the maximum diameter of the inferior vena cava [18 ± 4 vs 17 ± 4, (P < 0.01)], NT-proBNP [3460 (1878, 6801) vs 1870 at admission. The comprehensive score of TaPUS ultrasound congestion score can be used to evaluate the volume load of heart failure patients and predict the occurrence of short-term (927, 3783), P < 0.001], CCS clinical congestion score[5 (7, 9) vs 2 (3, 4), P < 0.01) and TaPUS ultrasonic congestion score [4 (3,6) vs 3 (2,5), P 0.001] were significantly improved at discharge than at admission. Heart failure patients with pleural effusion were reduced from 55 patients (37%) to 22 patients (15%). According to E/e' ratio, NT-proBNP, CCS score and TaPUS score, the patients were classified into three groups. In group A, patients were identified with E/e' < 15, NT-proBNP ≤ 1000 pg/ml, CCS score < 3, and TaPUS ≤ 4, which represented the absence of congestion at discharge. In group C, patients were identified with E/e' ≥ 15, NT-proBNP > 1000 pg/ml, CCS score ≥ 3, and TaPUS > 4, which represented the presence of congestion at discharge.



Biography:

Junteng Zhou is a doctoral student majoring in cardiovascular medicine of West China Hospital, Sichuan University. He has 3 years of standard training as an internal medicine physicians. He has also been involved in investigations of heart failure in China. He has presented an abstract on the relationship between arterial stiffness and heart failure at the 2019 ESC conference in Paris.

Publication of speakers:

1. Ambrosy A.P., Fonarow G.C., Butler Jj , et al. The global health and economic burden of hospitalizations for heart FailureLessons learned from hospitalized heart failure registries. J Am Coll Cardiol. 2014;63(April (12)):1123–1133.