1550529

Relation Between Red Cell Distribution Width and Outcomes in Patients with Acute Heart Failure

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Introduction: Red cell distribution width (RDW) is a measure of red blood cells size variability. Recently, it has been reported to predict outcomes in patients with heart failure and coronary artery disease, by unclear mechanism.

Objectives: To examine whether RDW predicts mortality in patients admitted for acute worsening of heart failure, and to check if there is a correlation between RDW and NT-proBNP.

Methods: Retrospective analysis of patients admitted for acute decompensation of heart failure between 10/2006 and 1/2009. For each patient demographic and clinical data (including RDW, NT-proBNP) were obtained. Follow-up for the occurence of death was performed using the national death registry.

Results: During the study period, 80 patients were recruited, with mean age of 72±11 years. of them, 60%were males, 74% had coronary artery disease, 55% had diabetes and 71% had reduced left ventricular systolic function (moderate or severe). The mean RDW was 15.8±1.8. Mean NT-proBNP value was 2263±608 PG/ML.

After a mean follow-up period of 748±260 days, 22 patients died. patients were divided into tertiles according to there RDW. Patients in the high RDW tertile had the least survival rates(Figure1,P=0.03). After adjusting for age,gender,diabetes,Hemoglobin,NT-proBNP and left ventricular function, their Hazard Ratio of mortality compared to patients in the low RDW tertile was 3.9,(P=0.03).

A modest, but statistically significant correlation was found between RDW and NT-proBNP level (Spearman correlation 0.28; p = 0.015).

Summary and conclusion:Increased RDW is independent predictor of survival in patients admitted with acute decompensation of heart failure. The mechanism by which RDW affects survival is unclear, but it's correlation with NT-proBNP may give a hint to the possible mechanism.