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THE RELATIONSHIP BETWEEN RED CELL DISTRIBUTION WIDTH WITH CLINICAL CHARACTERISTICS: ANALYSIS BASED ON 16681 CHRONIC SYSTOLIC HEART FAILURE PATIENTS WITH DIFFERENT CAUSATION

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Objective To determinate the prognostic value of red cell distribution (RDW) and the relationships between RDW and clinical characteristics in patients with CHF caused by different aetiologies.

Material and methods 16681 in-hospital patients from 12 hospital of Hubei province, China, with diagnosis of chronic systolic HF and LVEF<50% were enrolled. All patients were followed up by telephone contact. Patients were divided into RDW<13.3%, 13.3–14.1%, 14.1–14.8% and >14.8% groups; Mean corpuscular volume (MCV) decline (MCV<82FL), MCV elevation (MCV>92FL) and MCV normal (92FL>MCV>82FL) groups in patients with RDW>16%; death and survival groups according to the result of follow-up. Compared with RDW<13.3% group, adjusted HRs and 95% CI of all-cause mortality for RDW 13.3–14.1%, 14.1–14.8% and >14.8% were 0.892 (95% CI 0.818 to 0.973, p=0.01), 0.859 (95% CI 0.793 to 0.931, p<0.001) and 1.034 (95% CI 0.961 to 1.111, p=0.373) respectively. Compared with MCV normal group, the adjusted HR of MCV elevation and MCV decline group was 1.351 (95% CI 1.063 to 1.718, p<0.001) and 1.316 (95% CI 1.034 to 1.675, p<0.001), respectively. Compared with patients with RHD, the adjusted HR for all-cause mortality those with CHD, DCM and HHD with RDW>16% were 1.437 (95% CI 1.141 to 1.810, p=0.002), 1.651 (95% CI 1.276 to 2.138, p<0.001) and 1.276 (95% CI 1.004 to 1.621, p=0.007). The RDW is independently correlated with BMI ($\beta=-0.019$; p<0.001), diastolic blood pressure ($\beta=-0.008$; p<0.001), albumin ($\beta=-0.019$; p<0.001), blood urine nitrogen ($\beta=0.559$; p<0.001), right ventricular end-diastolic diameter ($\beta=0.01$; p<0.001), LVEF ($\beta=-0.013$, p<0.001) and heart rate ($\beta=0.005$; p<0.001). There was difference in the correlation factors with RDW among different aetiologies.

Conclusions The relationship between all-cause mortality and RDW is J shape while not linear. The elevation or decline of MCV in CHF patients with RDW increase suffered higher all-cause death risk. RDW has closely relationships with the clinical characteristics and the relationships are associated with different aetiologies.