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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.