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ANEMIA AND ABNORMAL VENTILATORY RESPONSE TO EXERCISE PREDICT ADVERSE CLINICAL OUTCOMES IN CHRONIC HEART FAILURE

ACC Poster Contributions
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Backgrounds: Abnormal ventilatory response to exercise, determined by ventilation/carbon-dioxide output (VE/VCO2) slope, is useful to grade the severity of patients with chronic heart failure (CHF). On the other hand, it has been recognized that anemia plays an important role in CHF. Anemia causes impaired exercise tolerance because of the reduced oxygen carrying capacity in the blood. In the present study, we examined whether the combination of VE/VCO2 slope and hemoglobin concentration was useful to predict risk in CHF.

Methods and Results: Consecutive 294 patients with CHF (mean age 59 ± 14 years-old, male 237) who underwent cardiopulmonary exercise testing before discharge were enrolled. Cut-off values of VE/VCO2 slope and hemoglobin concentration were determined by the ROC curves as 34 and 12 g/dL, respectively, and patients were divided into 4 groups based on these values. Patients were followed up for cardiac deaths and re-hospitalization due to worsening heart failure after discharge. During follow-up period (212 ± 176 days), 55 cardiac events were observed. Combination of VE/VCO2 slope and hemoglobin could clearly grade the prognosis of patients with CHF as shown in Kaplan-Meier event-free curves ($P < 0.0001$). Patients with high VE/VCO2 slope and low hemoglobin concentration had the lowest event-free rates.

Conclusions: Combination of VE/VCO2 slope and hemoglobin can identify high risk patients in CHF.