Topic: Heart Failure (Clinical), Cardiomyopathy, Myocarditis**Relationship Between VEGF-C Levels and All-cause Mortality in Patients with Chronic Heart Failure**

Moritake Iguchi,^{1,2} Shuichi Ura,¹ Nobutoyo Masunaga,^{1,2} Mitsuru Ishii,^{1,2} Takashi Unoki,^{1,2} Hisashi Ogawa,^{1,2} Daisuke Takagi,² Noriko Satoh-Asahara,³ Akira Shimatsu,⁴ Mitsuru Abe,^{1,2} Masaharu Akao,^{1,2} Koji Hasegawa¹ and Hiromichi Wada¹

1. Division of Translational Research, Kyoto Medical Center, Kyoto, Japan; 2. Department of Cardiology, Kyoto Medical Center, Kyoto, Japan; 3. Department of Endocrinology, Metabolism and Hypertension, Kyoto Medical Center, Kyoto, Japan; 4. Division of Diabetes Research, National Hospital Organization, Kyoto Medical Center, Kyoto, Japan

Keywords: Lymphatic system, chronic heart failure, vascular endothelial growth factor-C, lymphangiogenesis

Citation: *European Cardiology Review* 2018;**13**(2):129. **DOI:** <https://doi.org/10.15420/ecr.2018.13.2.PO10>

The lymphatic system has been suggested to play an important role in cardiovascular disease. Vascular endothelial growth factor-C (VEGF-C) plays a key role in lymphangiogenesis. However, the relationship between VEGF-C levels and mortality in patients with chronic heart failure is unknown.

We performed a prospective cohort study involving a total of 220 symptomatic patients with chronic heart failure. Patients were followed up over 4 years. The outcome was all-cause death. Serum levels of VEGF-C were measured at the baseline. Patients were divided into two groups based on the median of VEGF-C levels. During the follow-up, a total of 59 patients (26.8%) died from any cause. In Kaplan-Meier analysis, the low-VEGF-C group had a

significantly higher risk of all-cause death compared with the high-VEGF-C group ($p=0.003$ by log-rank test). Furthermore, multivariate Cox proportional hazard analysis revealed that the VEGF-C level was significantly and inversely associated with the risk of all-cause death after adjustment for established risk factors (i.e. age, sex, the body mass index, hypertension, diabetes, previous heart failure hospitalisation, coronary artery disease, persistent/permanent atrial fibrillation, chronic kidney disease, anaemia, and a reduced left ventricular ejection fraction [$<50\%$]) (adjusted hazard ratio, 0.72 for 1-SD increase; 95 % CI [0.52–0.99]; $p=0.04$).

In conclusion, a low VEGF-C value was independently associated with the risk of all-cause mortality in patients with chronic heart failure. ■