THE KOREAN SOCIETY OF NEPHROLOGY
APCN & KSN 2024
June 13(Thu) - 16(Sun), 2024 Coex, Seoul, Korea
Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

Abstract Submission No.: A-0627

Galectin-3 as a Predictor of Heart Failure in Hemodialysis Patients with Preserved Ejection Fraction

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Objectives : Heart failure (HF) is common among hemodialysis (HD) patients, but its diagnosis is challenging due to the limitations of use of traditional markers such as B-type natriuretic peptide (BNP) and clinical factors such as inappropriate body weight and preexisting left ventricular abnormalities. Galectin-3, a new biomarker linked to cell growth, fibrosis, apoptosis, and inflammation, has a recognized role in the development and prediction of HF, particularly in patients with preserved ejection fraction (EF). However, its significance in HD patients has not been fully investigated.
Methods : To evaluate the predictive role of serum galectin-3, we measured serum galectin-3 in 244 new HD patients with preserved EF. Patients with EF<40% and signs of volume overload were excluded. Acute HF was defined as sudden onset of dyspnea with signs of volume overload. Cases with serum BNP less than 100 pg/mL were excluded.
Results : Mean EF was 59.5 ± 7.3%, and median baseline BNP and galectin-3 levels were 360.0 pg/dL and 33.8 ng/mL, respectively, at the start of HD. Baseline serum galectin-3 levels were strongly associated with older age, coronary artery disease (CAD), and higher high-sensitivity CRP and BNP levels. During a median follow-up of 24 (IQR 12-48) months, 52 patients (21.3%) experienced acute HF within 14 months. The median BNP at the time of acute HF was 2165 pg/dL. The highest quartile of galectin-3 (Q4) significantly predicted acute HF events in HD patients with preserved EF. Multivariate analysis showed a 1.8-fold higher incidence of acute HF in patients with higher baseline galectin-3 levels, even after adjustment for variables such as age, sex, CAD, baseline EF, and BNP levels.
Conclusions : The study suggests that galectin-3 is a promising biomarker for predicting HF in HD patients with preserved EF, indicating its potential role as a useful tool for early diagnosis and management of HF in this high-risk population.