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**Prognostic impact and severity assessment of combinational elastography in heart failure patients**T. Sakamoto<sup>1</sup>, S. Ito<sup>1</sup>, K. Uchida<sup>2</sup>, H. Kuroda<sup>2</sup>, T. Minoji<sup>2</sup>, A. Endo<sup>1</sup>, H. Yoshitomi<sup>1</sup>, K. Tanabe<sup>1</sup><sup>1</sup>Shimane University Hospital, Izumo, Japan; <sup>2</sup>Masuda Red Cross Hospital, Masuda, Japan

**Background:** Heart failure (HF) causes liver congestion, which is thought to increase liver stiffness. Elastography is a noninvasive method of measuring organ stiffness that was originally developed to evaluate fibrosis caused by liver diseases such as cirrhosis. There are two main techniques of elastography: shear wave imaging and strain imaging. Shear wave imaging varies significantly due to the influence of not only fibrosis but also congestion, inflammation, and jaundice. In contrast, strain imaging in chronic liver disease reflects only the progression of liver fibrosis. We previously presented a method that is measuring both shear wave and strain imaging (combinational elastography) for assessing liver congestion. This study demonstrates the prognostic impact and severity assessment of combinational elastography in HF patients.

**Methods:** This study included 144 HF patients (age 76.4±12.3, men 67).

The velocity of shear wave (Vs) values was measured with shear wave imaging. Fibrosis index (F Index) was calculated by measuring both shear wave and strain imaging.

**Results:** During a median follow-up of 161 days, 14 deaths or hospitalization for HF was observed. A multivariable cox regression analysis demonstrated that high vs values was dependently correlated with higher mortality rate and HF hospitalization (hazard ratio: 2.31; 95% confidence interval: 1.09–4.89; p=0.029). The Kaplan-Meier analysis demonstrated that high vs (>1.87 m/s) was associated with higher hospitalization rates for HF compared with low vs (≤1.87 m/s, log rank test, p<0.001). F index showed graded elevation as stage of HF progressed (stage A or B, C, D: 1.19±0.43, 1.38±0.56, 2.8±1.32; p<0.001).

**Conclusion:** Combinational elastography can predict the severity of HF.