

# KSN 2016 Abstract Submission

## *Dialysis*

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### Prognostic Utility of Serum ST-2 level as a Predictor of Clinical Outcomes in Incidental Dialysis Patients

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**Background:** ST-2 is an emerging biomarker of heart failure and is associated with tissue fibrosis and cardiac remodeling. ST-2 concentration is known to be a predictor for cardiovascular (CV) mortality and hospitalization due to CV disease in patients with heart failure. End-stage renal disease (ESRD) patients have higher prevalence and incidence of heart failure and CV disease. However, the prognostic implications of serum ST-2 level are unknown in ESRD patients starting maintenance dialysis. This study was to evaluate the prognostic value of serum ST-2 level in incident dialysis patients, in terms of mortality and CV events.

**Methods:** A total 182 ESRD patients starting maintenance dialysis at Incheon St. Mary's Hospital from November 2011 to December 2014 were enrolled. We measured the pre-dialysis serum ST-2 level at the start of dialysis. Patients were divided into two groups according to the median ST-2 level (59.5 ng/ml, interquartile range 40.0 to 102.5): high ST2 group (n=91) and low ST-2 group (n=91). Laboratory and echocardiographic parameters were compared between the two groups, and factors associated with serum ST-2 level were analyzed. Primary end-points were all-cause of deaths and CV events. Event-free survival rates for composite of end-points were compared between the two groups. The associations between serum ST-2 level and mortality and CV events were investigated.

**Results:** Median follow up duration was 628 days (interquartile range 382 to 1,052 days). There was no significant difference in baseline demographic characteristics and comorbidity between the two groups. The high ST-2 group showed higher levels of C-reactive protein (CRP), phosphorus, and calcium-phosphorus product, and lower albumin and calcium levels than those of the low ST-2 group. Serum ST-2 level showed significantly positive correlations with levels of phosphorus, calcium-phosphorus product, and CRP, and the ratio of peak early to late diastolic filling, while it showed significantly negative correlations with serum albumin level and ejection fraction, after age- and sex-adjustment. The patient survival rate was significantly lower in the high ST-2 group compared with that of the low ST-2 group after 3 years follow up (69.2% vs. 86.9%, P=0.023). The event free survival rate for death and non-fatal CV event was significantly lower in the high ST-2 group compared with the low ST-2 group (59.4% vs. 80.3%, P=0.008). In multivariate Cox regression analysis, the ST-2 level was also a significant predictor for composite of end-points after adjustments for traditional CV risk factors and laboratory parameters (HR = 1.011, P = 0.003).

**Conclusion:** This study showed that serum ST-2 level independently predicted mortality and non-fatal CV events in ESRD patients. High ST-2 concentration could be an additive predictor for adverse CV outcomes in incident dialysis patients.

**Keywords:** cardiovascular disease, dialysis, end stage renal disease, mortality, ST-2