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Advanced Chronic Kidney Disease is Associated With Significant Serum Elabela Levels:
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Abstract 14939: Advanced Chronic Kidney Disease is Associated With Significant Serum Elabela Levels: Potential Correlation With Uremic Cardiomyopathy

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Abstract

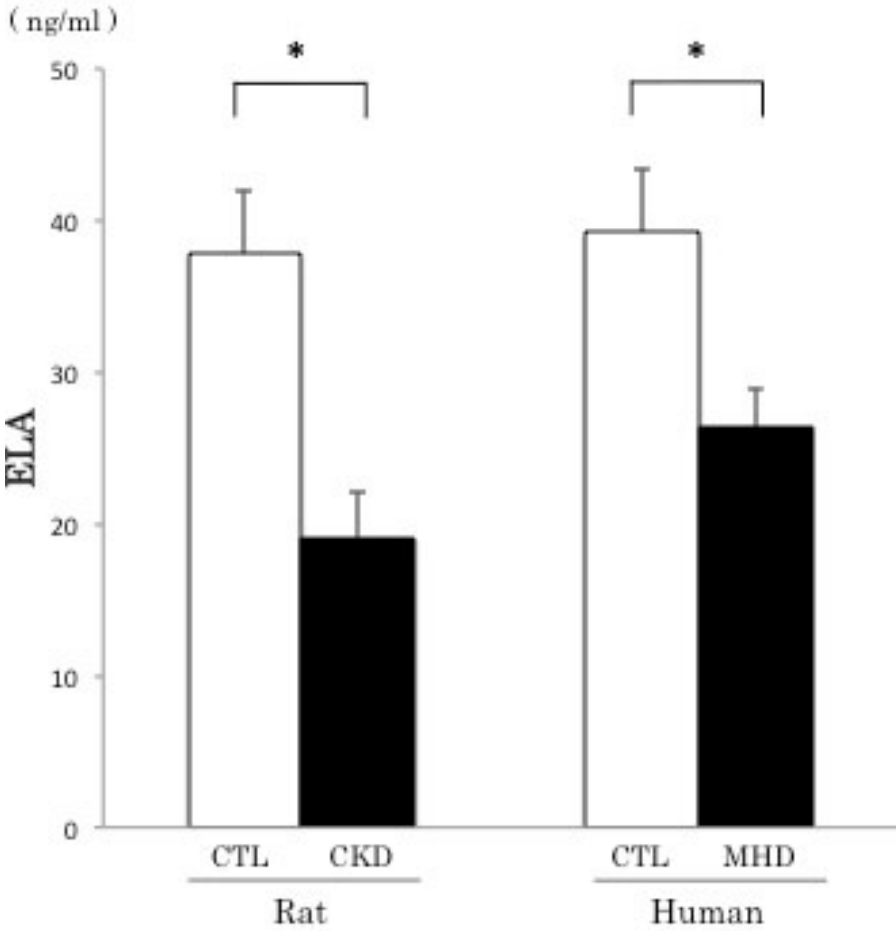
Introduction: Elabela (ELA) is a novel endogenous peptide ligand for the APJ/Apelin receptor, and plays an important role in normal development and function of the cardiovascular system. There is recent evidence suggesting that reduction of ELA levels is associated with the pathogenesis of cardiovascular (CV) disease. Given that chronic kidney disease (CKD) is associated with a significant increase in risk of CV disease and mortality, we examined the serum levels of ELA in an animal model of advanced CKD and in patients with end stage renal disease (ESRD) on maintenance hemodialysis (MHD).

Methods: Male SD rats were randomized to 5/6 nephrectomy (CKD) or sham-operation (CTL) and followed for 8 weeks. At the end of 8 weeks, animals were sacrificed and serum and heart tissue were collected and analyzed. Serum ELA was measured using an ELISA assay. Furthermore, left ventricular (LV) histology was assessed and size of cardiomyocytes was measured. In addition, serum ELA levels were measured in 49 MHD patients and compared to 23 healthy, age, race and gender matched controls.

Results: We found that serum concentrations of ELA were significantly decreased in animals with CKD and patients with ESRD on MHD when compared to CTLs (Figure). In animals, CKD was associated with hypertension, proteinuria, LV hypertrophy and significant increase in serum BUN and creatinine. Furthermore, serum levels of ELA negatively correlated with size of cardiomyocytes ($R^2 = -0.66$, $p < 0.05$) hence suggesting that reduced ELA levels may play a role in CKD-induced LV hypertrophy.

Conclusions: We found a significant decrease in serum concentrations of ELA in a rat model of advanced CKD as well as patients with ESRD on MHD. Future investigations will need to determine whether reduced serum ELA levels contribute to the pathogenesis of uremic cardiomyopathy.

Serum concentrations of ELA



Data are mean \pm SEM, * $p < 0.05$ vs. CTL

Heart development; Hypertrophy; Cardiorenal; Heart failure; Pathology