The Association between Serum Activin A Levels and Albuminuria in the Elderly

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Background/Synopsis: Activin A, a cytokine of transforming growth factor-β family, has been proved to play pivotal roles in inflammation, fibroblast activation, senescence, and tissue remodeling. Microalbuminuria and overt proteinuria serve both cause and integral outcome during the progression of cardiovascular and renal diseases. However, the association between circulating activin A and albuminuria in the elderly remains uncertain.

Objectives/Purpose: We raised the hypothesis that circulating activin A, together with its nature of a pro-inflammatory cytokine and pro-tissue remodeling cytokine, could be a surrogate marker of severity of albuminuria in aging people. The objective of this study was to prove whether serum activin A levels are associated with albuminuria.

Methods/Results: In our study, we applied cross-sectional data from the I-Lan longitudinal Aging Study (ILAS), which enrolled participants from community-dwelling middle-aged and older people. Circulating activin A level was measured by enzyme-linked immunosorbent assay. A total of 466 participants (67% male; mean age 71 ± 13 years) from the ILAS study were eligible for this study. Among 466 participants, 323 (69%) were normal albuminuria, 123 (26%) were microalbuminuria, and 20 (4%) were overt proteinuria. Firstly, circulating activin A level showed a positive correlation to microalbuminuria and overt proteinuria. Moreover, circulating activin A level showed significant correlation with multiple risk factors of renal and cardiovascular disease, including age, systolic blood pressure, and albumin-to-creatinine ratio. Furthermore, activin A level was shown to be a predictor of microalbuminuria/overt proteinuria with a satisfying sensitivity and specificity.

ANOVA p < 0.001
**Conclusion:** In light of our recent analysis, though hypertensive patients had significantly higher serum activin A levels than normotensives, hypertensive did not fully explain the extent of microalbuminuria/overt proteinuria. In this study, we proved that elevation of activin A was associated with microalbuminuria/overt proteinuria independent of hypertension. Altogether, circulating activin A level is a positive predictor for microalbuminuria and overt proteinuria.