KSN 2018
Seoul, Korea · May 17 - 20

Abstract Type : Poster
Presentation No. : PDL 004

Clinical utility of oxidative stress regulating protein APX-501 as a biomarker for the progression of atherosclerosis and its relationship with systemic inflammation in stable peritoneal dialysis patients

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Objectives: Chronic inflammation and oxidative injury are frequently present in patients on maintenance dialysis. Several studies have reported that specific uremic conditions are associated with chronic persistent inflammatory condition. We've previuosly presented APX-501 as an oxidative stress regulating protein. In the present study, we evaluated the level of APX-501 in chronic dialysis patients.

Methods: This study was a multicenter, prospective study that examined the correlation of serum molecule X in patients on chronic dialysis. Total 220 patients on dialysis (both peritoneal and hemodialysis) were enrolled between January 2016 to February 2018. APX-501 level was measured using commercial ELISA (#MBS9336970).

Results: Of 220 patients, 70% patients were on peritoneal dialysis, of which 30% patients were enrolled at initiation of peritoneal dialysis. Serum APX-501 level was significantly increased in chronic peritoneal dialysis patients who were on peritoneal dialysis for more than 6months compared to patients initiating peritoneal dialysis and patients on maintenance hemodialysis (662.5 ±631.7 vs 431.58±260 vs 463.14± 338.82, p=0.011, p=0.01 each). In diabetic patients, the differences among the groups were not significant, with a trend to increase in APX-501 level in hemodialysis patients, implicating that diabetic condition may complicate the oxidative stress in uremic environment. In chronic peritoneal dialysis patients, diabetic patients showed significantly decreased level of serum APX-501 levels compared to non-diabetic patients (439.51 ±310.98 vs 735.44±692.60. p=0.015). Patients' vascular calcification was evaluated using L-spine lateral x-ray. Although there was a trend to increase in APX-501 levels in patients with advanced vascular calcifications, serum APX-501 was not able to predict hospitalization or mortality, whereas vascular calcifications was a significant predictor.

Conclusions: ,Increased oxidative stress associated with uremia may be assessed with serum APX-501 in chronic peritoneal dialysis patients, however the utility of APX is yet to determined. This studi is still ongoing with serial data and outcome to be followed.