Sclerostin ; Another Vascular Calcification Inhibitor

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Introduction and Objective: Arterial stiffness is an important risk factor for cardiovascular events and mortality in all stages of chronic kidney disease (CKD). Recent studies have demonstrated that sclerostin, which is a Wnt inhibitor, is associated with vascular/valvular calcification in CKD. The aim of the present study was to evaluate the factors determining arterial stiffness in chronic hemodialysis (HD) patients and their relation with sclerostin.

Material-Method: This is a prospective cohort study performed after the approval by Ankara University School of Medicine Ethics Committee for Clinical Studies in accordance with Helsinki Declaration guidelines and written informed consent were obtained from all participants (22 September 2014 No: 15-650-14). Turkish Society of Hypertension and Renal Diseases funded cost of the study.

73 patients undergoing hemodialysis three times weekly for at least 6 months in hemodialysis center of nephroology department of Ankara University School of Medicine and 40 sex and age matched healthy volunteers as control group were included. In the control group sclerostin and in patients sclerostin and carotid-femoral pulse wave velocity (PWV) was measured. Sclerostin levels were measured with ELISA (R&D systems, Europe, Human SOST). In patients sclerostin samples were collected before the weekly dialysis session while in control group anytime. PWV calculated using SphygmoCor branded tonometry device (AtCor Medical Instruments, Illinois, USA). Demographic data, laboratory data, and medications of patients were recorded.

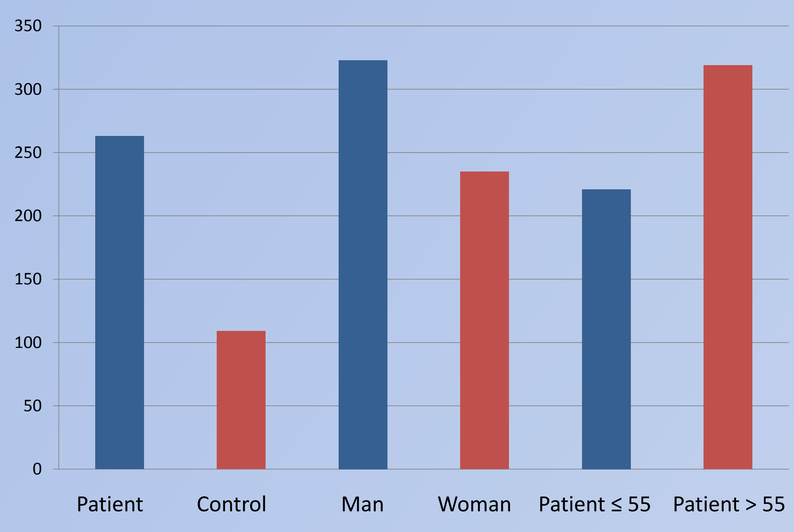

Figure1 Association of sclerostin with age and sex in the patient groups and sclerostin values in patient and control groups

Table 1 Multi variable regression analysis of sclerostin model 1 (including Kt/V) and model 2 (not including Kt/V)

	R^2	β	p
Model 1 (including Kt/V)			
Statin use		143.93	0.093
PTH		**-0.282**	**<0.001**
Male sex		**110.87**	**0.05**
Kt/V		-141.46	0.075
	0.446		
Model 2 (not including Kt/V)			
Statin use		**168.96**	**0.05**
PTH		**-0.270**	**<0.001**
Male sex		**174.82**	**<0.001**
	0.420		

Table 2 Multi variable regression analysis of PWV

Parameter	R^2	β	p
Age		**0.068**	**0.003**
DM		**1.440**	**0.038**
Use of vitamin D		-1.202	0.059
HD onset systolic artery pressure		**0.058**	**0.001**
Body mass index (BMI)		0.093	0.093
	0.506		

Results and Conclusion: In hemodialysis patient group including 35 female and 38 male cases, mean age was 55±15. Mean PWV was 9.2±2.7m/sec (in females 8.4 m/sec and in males 9 m/sec, p:0.145). In the patient groups, sclerostin level was found to be significantly higher than control group (327±207 pg/mL and 141±88 pg/mL respectively,p<0.001). In the patient groups, significant difference was found between genders in terms of sclerostin values (in females 235 pg/mL and in males 319 pg/mL, p:0.007). In multi variable correlation analysis, while PWV had positive correlation with age (β:0.068, p:0.003), diabetes mellitus (DM) (β:1.440, p:0.038) and HD onset systolic artery pressure (β:0.058, p:0.001); sclerostin had positive correlation with male sex (β:174.82, p<0.001) and statin use (β:168.96, p:0.05) and negative correlation with parathyroid hormone (PTH) (β:-0.282, p<0.001). While PWV and sclerostin had positive correlation in single variable correlation analysis, they had no correlation in multi variable regression analysis. Further studies with larger series are requiered in order to determine whether changes in sclerostin levels during the course of disease predict alterations in PWV.

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