COMPARISON OF SERUM 25-HYDROXYVITAMIN D LEVELS IN DIFFERENT POPULATIONS - A MAJOR ISSUE FOR HEMODIALYSIS PATIENTS

Makrouhi Sonikian[1], Theodora Papachryssanthou[1], Panagiotis Politis[1], Irene Kastrinelli[2], Claudia Lougovoi[2], Georgios Tserkezis[1], Christophoros Parissis[1], Pinelopi Paraskevopoulou[2]

Nephrology[1] and Biochemistry[2] Departments, Konstantopoulion General Hospital, Athens, GREECE

INTRODUCTION : Serum 25-hydroxyvitamin D(25OHVD) levels, measure of vitamin D(VD) body stores[1], are low in chronic kidney disease(CKD)[2]. VD deficiency is associated with cardiac failure and inflammation, muscle weakness and falls[3-4]. Repletion of native VD is recommended in stages 3 and 4[5], but low serum 25OHD levels are also observed in dialysis patients and elderly general population as well[4].

AIM OF THE STUDY : Comparlson of the severity of VD insufficiency in hemodialysis, CKD stage 3-4 patients and elderly healthy controls

SUBJECTS : Seventy six individuals in a good general condition, without active liver disease participated in this observational study.

	Group A (n=34)	Group B (n=34)	Group C (n=34)
Age (years)	70 (47-90)	72 (62-81)	68 (60-71)
Gender (men/women)	19/15	14/16	5/7
Disease	Hemodialysis	CKD 3-4	Healthy controls
eGFR (ml/min/1,73^2)	<15	15-59	>60

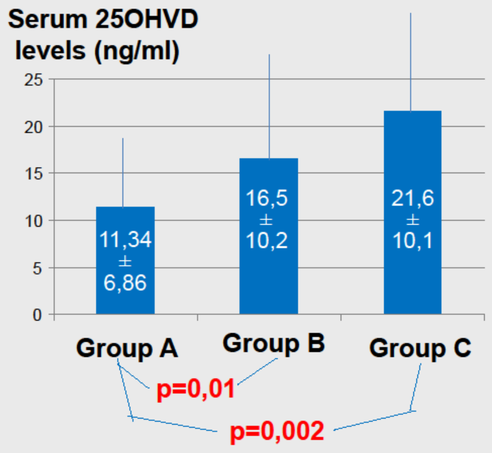
Group A patients were on HD treatment since 50(6-222) months, dialyzed thrice weekly for 4-5 hours per session, treated with sevelamer carbonate, lanthanum carbonate or calcium carbonate as phosphate binders, paricalcitol and/or cinacalcet for secondary hyperparathyroidism.

METHODS : Blood sampling was performed in June in Athens-Greece for determination of serum 25OHVD levels by chemiluminescence (Advia Centaur analyser) and various biochemical parameters as well.

RESULTS : Low serum 25OHVD levels (<30 ng/ml) were observed in all three groups.

GROUP COMPARISON

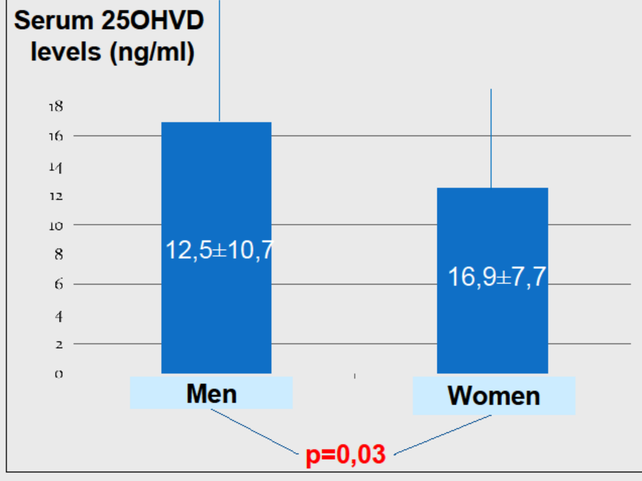
HD patients had lower serum 25OHVD levels than CKD patients and healthy controls.



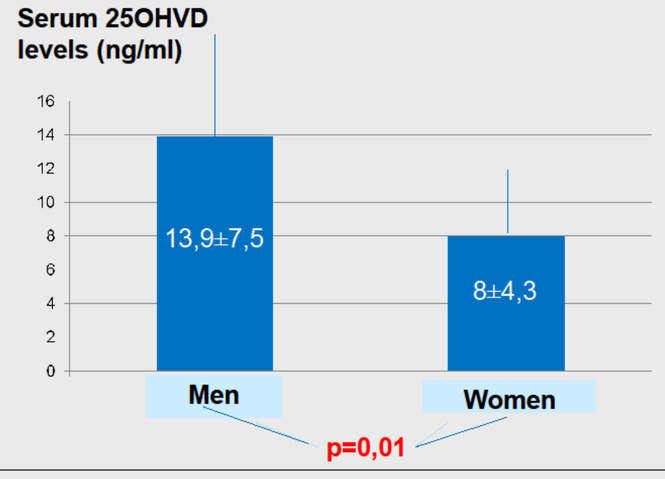
GENDER COMPARISON

Compared to men, women presented with lower serum 25OHVD levels in the total of studied subjects. Specifically, the difference was marginal in B and C groups (p=0,05 respectively) and more obvious in group A.

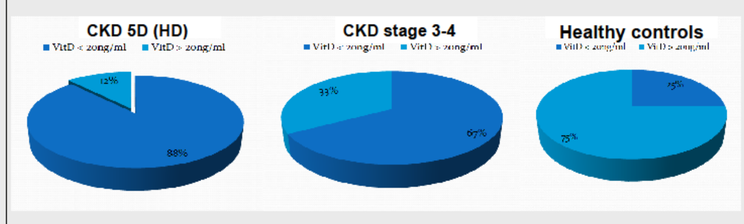
All Groups A, B, C



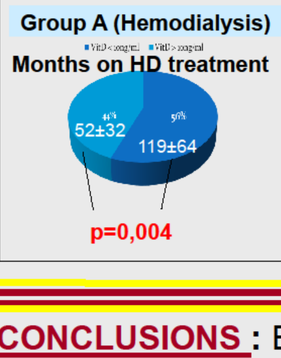
Group A



GROUP COMPARISON REGARDING VITD DEFICIENCY SEVERITY (25OH-VitD <20ng/ml)



VD deficiency was observed in 30/34 HD patients (88,2%), in 20/30 CKD stage 3-4 patients (66,6%) and in 3/12 controls (25%).



In 19/30 deficient HD patients (63,3%) very low 25OHVD values <10ng/ml were observed; these patients had more time on HD compared to the remaining of the group A .

SERUM 25OHVD CORRELATIONS WITH OTHER PARAMETERS

PARAMETER	GROUP A		GROUP B	
	R	p	R	p
Age (years)	**- 0,6097**	**0,001**	- 0,3482	0,324
PTH (pg/ml)	0,1397	0,487	- 0,3503	0,321
ALP (U/L)	0,0185	0,927	- 0,0041	0,991
P (mg/dl)	0,0447	0,825	- 0,0625	0,864
Ca (mg/dl)	0,0105	0,959	- 0,4603	0,181
PROT (g/dl)	**0,3749**	**0,050**	- 0,5652	0,055
ALB (g/dl)	0,3096	0,116	- 0,5218	0,065
UREA (mg/dl)	0,1348	0,503	0,0828	0,820
CREATININE (mg/dl)	0,0245	0,856	- 0,2953	0,407
CRP (mg/L)	-0,2616	0,187	0,4102	0,239
FERRITIN (ng/ml)	-0,0958	0,634	- 0,3135	0,378

In A group significant correlations of serum 25OHVD levels were observed with age and serum protein levels. No association with other parameters or medications was observed.

CONCLUSIONS : Even in a country with plenty of sunshine and in a summer month, VD deficiency is present in elderly general population[4] but mainly in renal patients, particularly in chronic hemodialysis[6] and especially in elderly patients and women[7]. VD supplementation in HD could be recommended without prior determination of serum 25OHVD levels[8].

PARAMETER VALUES IN PATIENT GROUPS

PARAMETER	GROUP A MEAN±SD	GROUP B MEAN±SD	p
Age (years)	69,8±11,5	72,6±6,4	0,07
PTH (pg/ml)	233,2±158,4	251,7±159,7	0,94
ALP (U/L)	81,1±27,8	99,5±38,9	0,16
P (mg/dl)	4,8±1,5	4,0±0,8	**0,01**
Ca (mg/dl)	9,1±0,6	8,9±0,4	**0,02**
PROT (g/dl)	6,8±0,6	7,3±0,5	0,49
ALB (g/dl)	3,5±0,4	3,8±0,2	**0,01**
UREA (mg/dl)	137,8±39,3	107,4±39,4	0,96
CREATININE (mg/dl)	8,0±2,7	2,7±1,3	**0,001**
CRP (mg/L)	6,5±4,1	2,8±2,2	**0,002**
FERRITIN (ng/ml)	426,2±115,4	98,5±65,7	**0,001**

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