

# GENDER- AND AGE-RELATED PROFILES OF VITAMIN D STATUS IN PATIENTS WITH KIDNEY STONE DISEASE

C.Vitale, S.Berutti, C.Bagnis, A.Tricerri, L.Gallo, F.Dutto, M.Migliardi and M.Marangella  
 Nephrology and Dialysis Unit and Clinical Chemistry Laboratory, Mauriziano Hospital, Turin, Italy.  
 e-mail : covitale@mauriziano.it

## INTRODUCTION

Vitamin D can increase intestinal absorption and urinary excretion of calcium, thereby influencing both bone turnover and risk of kidney stone formation. In this paper we investigated on plasma profiles of vitamin D metabolites in a large cohort of patients with calcium nephrolithiasis, matched for age and sex.

## METHODS

N° 745 stone formers (364 males, aged 47±15; 381 females, aged 51±16), who had been submitted to our extended study protocol for mineral metabolism and urine supersaturation 2009 through 2012, were considered for this study.  
 According to age, both males and females were further classified in subgroups: (A) 18-45 yrs; (B) 46-55 yrs; (C) 56-70 yrs; (D) over 70 yrs. Then, both plasma levels of 25OHVitD<sub>3</sub> (25D<sub>3</sub>) and 1.25(OH)<sub>2</sub>VitD<sub>3</sub> (1.25D<sub>3</sub>) profiles were analyzed according to age and gender. Plasma levels of 25D<sub>3</sub> below 15 ng/mL were taken as vitamin D deficiency.  
 Renal function was measured as creatinine clearance (ClCr) and daily calcium excretion (uCa) as mg/kg/b.w.

## RESULTS

In females, 25D<sub>3</sub> was significantly related to Body Mass Index (BMI), (R<sup>2</sup>=0.03, p<0.01), but not to ClCr. In males, 25D<sub>3</sub> was significantly related to ClCr (R<sup>2</sup>=0.02, p<0.01) and independent of BMI (p=ns). 1.25D<sub>3</sub> was significantly related to 25D<sub>3</sub>, in both females and males ( p<0.01 for both), whereas it was independent of PTH in both genders (p=ns). uCa was significantly related to 1.25D<sub>3</sub>, in both females and males (p<0.01 for both).  
 Main data referred to subgroups are reported in the table.  
 In males, neither the averaged 25D<sub>3</sub> nor the prevalence of subjects with VitD deficiency varied significantly according to age. Conversely, the averaged 25D<sub>3</sub> was significantly lower in post-menopausal (C+D) than in pre-menopausal females (A+B) and prevalence of VitD deficiency was lower in the latter (p<0.01).  
 In males, 1.25D<sub>3</sub> was independent of age, whereas it was significantly reduced in post-menopausal compared to pre-menopausal females (p<0.01).  
 Within each subgroup of age, 1.25D<sub>3</sub> did not differ significantly between genders. In group C, 25D<sub>3</sub> was significantly lower in females.

Females	[A] 18-45 yrs (n=148)	[B] 46-55 yrs (n=64)	[C] 56-70 yrs (n=124)	[D] over 70 yrs (n=45)
25OH VitD (ng/ml)	22.9 ± 11.0	22.6 ± 11.6	19.7 ± 12.1 (§ *)	17.8 ± 11.6 (§)
Values < 15 ng/ml (%)	25	29.7	41.1 (§)	48.9 (§)
1.25OH VitD (pg/ml)	53.4 ± 17.8	54.5 ± 23.3	45.6 ± 16.9 (§)	41.7 ± 16.6 (§)

Males	[A] 18-45 yrs (n=177)	[B] 46-55 yrs (n=74]	[C] 56-70 yrs (n=85]	[D] over 70 yrs (n=28)
25OH VitD (ng/ml)	22.9 ± 11.1	24.2 ± 10.9	24.4 ± 11.3	21.1 ± 10.8
Values < 15 ng/ml (%)	31.1	18.9	21.2	32.1
1.25OH VitD (pg/ml)	51.9 ± 18.7	49.5 ± 19.0	49.5 ± 18.5	45.3 ± 20.0

## CONCLUSIONS

There is a high prevalence of vitamin D deficiency in stone forming patients (the higher percentage being observed in postmenopausal women) and its detrimental effects on calcium balance and bone mineral content are probably still underestimated.

