

Epidemiology of vitamin D deficiency in West African hemodialysis patients: A pilot study from Senegal

Sir,

Vitamin D deficiency is common in chronic kidney disease patients undergoing hemodialysis and is associated with bone disorders^[1] and increased mortality.^[2] Previous studies suggest that vitamin D deficiency is more frequent in patients with an African origin whose skin pigmentation is a barrier to ultraviolet rays necessary to 25-OH vitamin D synthesis.^[1,3] Like in many developing regions, little is currently known about vitamin D status of dialysis patients from Sub-Saharan Africa.^[4] Data from black populations living in the United States or Europe might not be applicable for African patients whose dietary habits and sunlight exposures are different. We report here a pilot study that aimed to determine the prevalence of vitamin D deficiency in Senegalese hemodialysis patients.

In a cross-sectional study between March 30th and October 30th 2011, we included 46 patients from two main hemodialysis centers in Dakar. Clinical data, serum calcium, phosphate and vitamin D levels during the last 3 months were collected from patients' medical records. All dosages of 25-OH vitamin D were performed using electrochemiluminescence immunoassay (COBAS Roche Diagnostics). Vitamin D deficiency was defined as a serum 25-OH vitamin D level <15 µg/l. Univariate and multivariate logistic regressions were used to identify the factors associated with vitamin D deficiency.

Mean age of patients was 50.3 ± 12.7 years (13-77 years) and 39.1% of them were females. All patients were dialyzed using the bicarbonate buffer and a calcium rich

dialysate (1.75 mmol/l). Almost all of them (91%) had a weekly Kt/V >1.2. Thirty six patients (78.2%) presented pre-dialysis high blood pressure (≥140/90 mmHg) and six patients (13%) had a body mass index above 30 kg/m². The etiologies of end-stage renal disease were dominated by hypertension (39%) and diabetes (26%).

Prevalence of vitamin D deficiency was 32.6% and 28 patients (60.8%) had a vitamin D level between 15 µg/L and 30 µg/l). This prevalence was comparable between men and women (respectively 47.3% and 50.0%, *P* = 0.93). After multivariate logistic regression, age ≥50 years, hypocalcemia and hyperparathyroidism showed significant association of vitamin D deficiency, but gender and hyperphosphatemia did not [Table 1].

The present results show that the prevalence of vitamin D deficiency in hemodialysis patients living in Senegal is similar to those reported in Western countries.^[1,3,5]

Despite limitation due to small sample size and the cross-sectional study design, this study could be a basis for larger prospective cohort that would also assess the effect of vitamin D deficiency on bone and cardiovascular outcomes in African dialysis patients.

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Table 1: Parameters associated with vitamin D deficiency

| Variables | Univariate analysis | | Multivariate analysis | |
|--------------------------|---------------------|----------|-----------------------|----------|
| | OR (95% CI) | <i>P</i> | OR (95% CI) | <i>P</i> |
| Age (≥50 vs. <50 years) | 2.15 (1.05-15.06) | 0.04 | 1.13 (1.00-4.67) | 0.05 |
| Gender (female vs. male) | 0.94 (0.23-4.13) | 0.93 | 0.87 (0.10-7.53) | 0.89 |
| Hypocalcemia | 1.90 (1.14-18.71) | 0.04 | 1.11 (0.95-1.29) | 0.01 |
| Hyperphosphatemia | 2.10 (0.33-21.25) | 0.18 | 1.27 (0.66-1.83) | 0.60 |
| Hyperparathyroidism | 1.41 (0.87-16.59) | 0.02 | 1.29 (0.78-13.05) | 0.03 |

OR: Odds ratio, CI: Confidence interval

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