

DOES RECOGNITION OF VITAMIN D DEFICIENCY AFFECT THE INDICATION FOR SURGICAL TREATMENT IN ASYMPTOMATIC PRIMARY HYPERPARATHYROIDISM ?



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Abstract

Introduction: Current guidelines for the management of asymptomatic primary hyperparathyroidism (A-pHPT) recommend that 25-hydroxyvitamin D levels should be assessed in all pHPT patients and vitamin D deficiency (VDD) should be cautiously corrected when detected. However it is unknown whether VDD affects the probability to meet surgical criteria currently proposed for A-pHPT. Aim of this study was to evaluate whether VDD recognition affects the probability to meet surgical criteria in A-pHPT patients.

Methods: 80 consecutive A-pHPT patients were studied (mean \pm S.D. age: 66.5 \pm 8.9 years; male/female = 10/70 ; PTH: 179.8 \pm 134.7 ng/l, calcium: 10.8 \pm 0.7 mg/dl; ionized calcium: 1.39 \pm 0.10 mmol/l; 25OHD: 30.0 \pm 21.3 ng/ml). VDD was defined as 25-hydroxyvitamin D < 20 ng/ml. The criteria for parathyroid surgery by the III International Workshop on the Management of ApHPT were considered, i.e.: Serum calcium >1 mg/dl the upper normal limit; Creatinine clearance <60 ml/min; T-score < -2.5 at any site.

Results : VDD was present in 32 patients (40%). A-pHPT patients with VDD showed higher PTH (240.8 \pm 155.0 vs 139.1 \pm 102.0 ng/l; p=0.0007), total (11.0 \pm 0.7 vs 10.7 \pm 0.66 mg/dl; p=0.04) and ionized calcium (1.42 \pm 0.1 vs 1.37 \pm 0.08 mmol/l; p=0.013) and lower forearm T score (-3.00 \pm 1.5 vs -2.15 \pm 1.4, p=0.019) compared with A-pHPT without VDD. No difference in fulfillment of any surgical criteria was present between A-pHPT patients with or without VDD (calcium criterion = 25% vs 14.6%, p =0.2586; eGFR criterion = 19.4% vs 21.7%, p=1.000; T-score criterion = 78.1 % vs 64.6 %, p=0.2226, respectively).

Conclusion: these findings show that VDD is not rarely detected in A-pHPT and affects biochemical and densitometric features; however, they indicate that recognition of VDD does not affect the probability to meet surgical criteria proposed by current guidelines in A-pHPT. Thus, the assessment of vitamin D status, as recommended, does not affect the therapeutical choice for surgery in A-pHPT.

Objectives

Current guidelines for the management of asymptomatic primary hyperparathyroidism (A-pHPT) recommend that 25-hydroxyvitamin D levels should be assessed in all pHPT patients and vitamin D deficiency (VDD) should be cautiously corrected when detected (1). However it is unknown whether VDD affects the probability to meet surgical criteria currently proposed for A-pHPT.

Aim of this study was to evaluate whether VDD recognition affects the probability to meet surgical criteria in A-pHPT patients.

Methods

80 consecutive A-pHPT patients (older than 50 yrs) were studied (mean \pm S.D. age: 66.5 \pm 8.9 years; male/female = 10/70 ; PTH: 179.8 \pm 134.7 ng/l, calcium: 10.8 \pm 0.7 mg/dl; ionized calcium: 1.39 \pm 0.10 mmol/l; 25OHD: 30.0 \pm 21.3 ng/ml).

VDD was defined as 25-hydroxyvitamin D < 20 ng/ml (2).

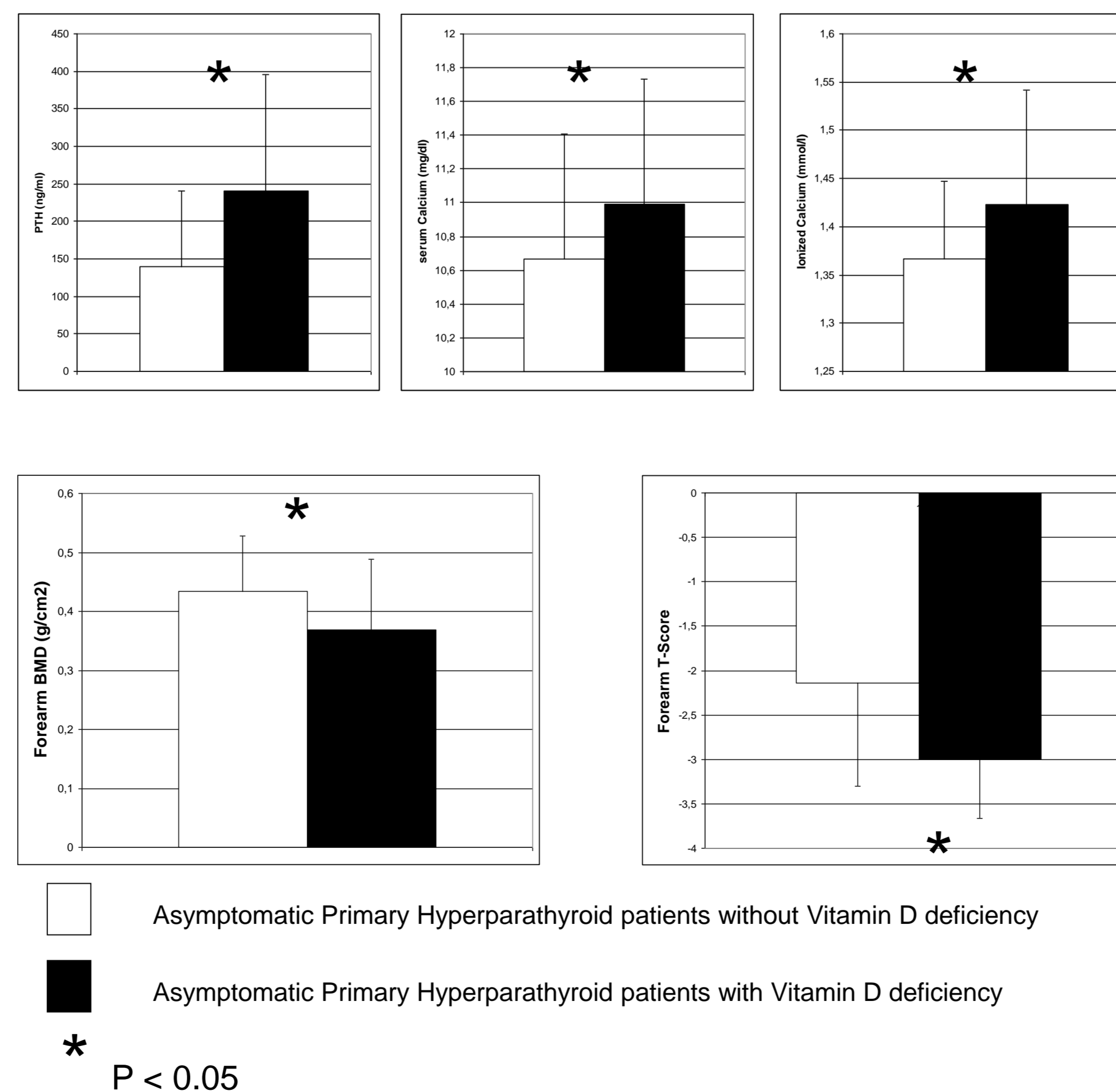
The criteria for parathyroid surgery by the III International Workshop on the Management of ApHPT were considered, i.e.: Serum calcium >1 mg/dl the upper normal limit; Creatinine clearance <60 ml/min; T-score < -2.5 at any site (1) .

Table 1 : clinical and biochemical data of patients

	PHPT patients (n=80)	
	Mean \pm S.D.	Normal range
Age (years)	66.5 \pm 8.9	-
BMI (kg/m ²)	26.7 \pm 5.3	-
SBP (mmHg)	139.7 \pm 26.3	-
DBP (mmHg)	79.9 \pm 22.2	-
PTH (ng/ml)*	125.5 (42-710)	10-65
Serum Calcium (mg/dl)	10.8 \pm 0.7	8.4 – 10.2
Ionized Calcium (mmol/l)	1.39 \pm 0.10	1.13 – 1.32
Alkaline Phosphatase (U/l)	95.1 \pm 46.0	38 – 126
Serum Creatinine (mg/dl)	0.85 \pm 0.28	0.7 – 1.2
Creatinine Clearance (ml/min)	85.5 \pm 45.2	90 – 150
25 OH Vitamin D (ng/ml)	30.0 \pm 21.3	20-70
Femoral BMD (g/cm ²)	0.73 \pm 0.19	-
Femoral T-Score	-2.12 \pm 1.07	-
Lumbar BMD (g/cm ²)	0.81 \pm 0.16	-
Lumbar T-Score	-2.57 \pm 1.39	-
Forearm BMD (g/cm ²)	0.41 \pm 0.12	-
Forearm T-Score	-2.48 \pm 1.49	-

* expressed as median (range).

Figure 1 : biochemical and BMD data in VDD vs no VDD patients



Results

VDD was present in 32 patients (40%).

A-pHPT patients with VDD showed higher PTH (240.8 \pm 155.0 vs 139.1 \pm 102.0 ng/l; p=0.0007), total (11.0 \pm 0.7 vs 10.7 \pm 0.66 mg/dl; p=0.04) and ionized calcium (1.42 \pm 0.1 vs 1.37 \pm 0.08 mmol/l; p=0.013) and lower forearm T score (-3.00 \pm 1.5 vs -2.15 \pm 1.4, p=0.019) compared with A-pHPT without VDD.

No difference in fulfillment of any surgical criteria was present between A-pHPT patients with or without VDD (Table 2).

Table 2 : prevalence of criteria for surgery

	VDD	Without VDD	p*
Calcium criterion	25.0 %	14.6 %	0.259
eGFR criterion	19.4%	21.7%	1.000
T score criterion (at any site)	78.1 %	64.6 %	0.223

* Fisher's exact test

Conclusions

VDD is frequently detected in A-pHPT and affects biochemical and densitometric features.

However, the recognition of VDD does not affect the probability to meet surgical criteria proposed by current guidelines in A-pHPT.

Thus, VDD recognition doesn't work as a predictor for surgery in A-pHPT patients .

References

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- Holick MF, Binkley NC, Bischoff-Ferrari HA, Gordon CM, Hanley DA, Heaney RP, Murad MH, Weaver CM 2011 Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab. 96:1911–1930