Measuring BMD at forearm increases the diagnosis of osteoporosis and identifies more patients for surgery in asymptomatic primary hyperparathyroidism

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Introduction

Reduction in bone mineral density (BMD) is a common feature in primary hyperparathyroidism (PHPT), involving mostly cortical site. In the management of asymptomatic patients , guidelines indicate measuring BMD at three sites including distal 1/3 radius (beside lumbar spine and hip) and surgery is recommended for peri- or postmenopausal women and men aged 50 and older who have a T-score of -2.5 or less at one of these sites. In premenopausal women and in men under 50, the Z score of <=- 2.5 is recommended as the cut-off point below which surgery is advised. However, BMD measurement at all three sites is not always performed, in particular at distal 1/3 radius.

Aim of the study

Our aim was to evaluate the impact of measuring forearm BMD in the clinical characterization as well as in the therapeutical management of asymptomatic patients with PHPT.

Subjects and Methods

We retrospectively reviewed a prospective database of adult patients with asymptomatic PHPT (aPHPT, n=116) at our institution between 1998 and 2013. The study cohort was identified by examining those patients who had at the time of diagnosis a dual x-ray absorptiometry (DXA) scan at three sites, including forearm assessment. In all patients we measured PTH, total serum and ionized calcium, urinary calcium excretion, vitamin D and creatinine levels (Table 1).

Table 1. Clinical and hormonal data of all PHPT patients (n = 116)	
Age (yrs) mean ± sd	63,7 ± 11,7
F:M	97 : 19
PTH (pg/ml) mean ± sd	185,2 ± 171,9
Total Calcium (mg/dl) mean ± sd	10,9 ± 0,8
Ionized calcium (mmol/l) mean ± sd	1,4 ± 0,2
24h urinary calcium (mg/24 h) mean ± sd	214,4 ± 155
25OH vitamin D (ng/ml) mean ± sd	30,0 ± 21,2
Serum creatinine (mg/dl) mean ± sd	0,8 ± 0,2

Results

Out of 116 patients with aPHPT we identified 13 (group A, 11,2%) who had a T score lower than - 2.5 at forearm only, of which 6 (5.2%) possessed the criteria for surgery identified on the basis of forearm BMD only. Group B were the remaining 103 patients. Group A was older than group B (71±7.7 vs 62.7±11.8 yrs, p< 0.016) while no significant difference was found in the biochemical measurements or in the BMD values at either of the other sites. (Table 2).

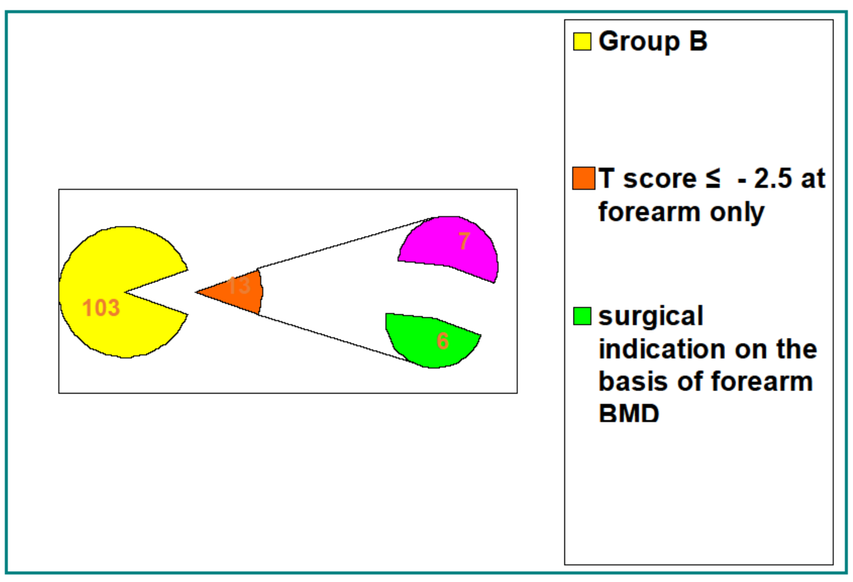

Table 2	Group A (n = 13)	Group B (n = 103)	p
Age (yrs) mean ± sd	71 ± 7,7	62,7 ± 11,8	< 0,016
F (%)	84,6	83,5	n.s.
PTH (pg/ml) mean ± sd	192,8 ± 98,2	184,2 ± 179,5	n.s.
Total serum calcium (mg/dl) mean ± sd	10,9 ± 0,9	10,9 ± 0,8	n.s.
Ionized calcium (mmol/l) mean ± sd	1,4 ± 0,1	1,4 ± 0,2	n.s.
24 h urinary calcium (mg/24 h) mean ± sd	203,8 ± 127,7	215, 9 ± 159,3	n.s.
Serum 25OH vitamin D (ng/ml) mean ± sd	22 ± 16	31,1 ± 21,8	n.s.
Serum creatinine (mg/dl) mean ± sd	0,9 ± 0,2	0,8 ± 0,2	n.s.

Conclusions

In our series of aPHPT, DXA on three sites revealed osteoporosis at forearm and not at other sites in 11.2 % of patients. Among these, the half was identified for surgery based on bone density criteria at forearm alone. Except for age, these patients do not show any particular clinical/ biochemical or densitometrical difference from the remaining patients with asymptomatic PHPT. Preoperative forearm DXA assessment increases the number of patients who meet the criteria for surgery based on bone density alone.

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