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Endocrine Society's 98th Annual Meeting and Expo, April 1–4, 2016 - Boston

PP26-4: Serum Calcium to Phosphorous Ratio (Ca/P) As a Simple, Inexpensive Screening Tool in the Diagnosis of Primary Hyperparathyroidism (PHPT)

Bruno Madeo¹, Elda Kara¹, Katia Cioni Cioni¹, Silvia Vezzani¹, Manuela Simoni¹ and Vincenzo Rochira¹

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Presentation Number: PP26-4

Date of Presentation: April 3, 2016

ABSTRACT

Abstract:

Background: PHPT is the third most common endocrine disease, but it remains often overlooked and underdiagnosed. Several strategies, including biochemical markers used alone or combined in complex algorithms, have been investigated in the past with the aim to identify tools useful to easily diagnose or screen PHPT. At present, however, the diagnosis of PHPT remains challenging, especially in asymptomatic patients. As serum calcium (Ca) and phosphorous (P) are inversely related in PHPT, the Ca/P ratio might be considered a good candidate tool in the diagnosis of PHPT. Surprisingly, no data on Ca/P ratio are available in literature, despite they are very simple biochemical measurements largely available in any clinical laboratory setting. The aim of this study is to investigate the diagnostic value of the Ca/P ratio in the diagnosis of PHPT. **Material and Methods:** Data retrospectively obtained from review charts of 97 patients with documented PHPT (69 females; 28 males) were compared with those of 96 controls (C) (44 females; 52 males). Exclusion criteria: age <18yrs, severe chronic diseases, cancer, bone metabolic diseases, use of medications affecting serum Ca. Biochemical measurements included PTH, Vitamin D (LIASON, XL, Diasorin device), serum Ca, P, albumin, and creatinine (AU 680 Beckman device). Normal ranges were 15-88 pg/mL, 8.5-11, and 2.5-5.1 mg/dl for PTH, Ca, and P, respectively. SPSS 19.0 and SigmaPlot 11.0 were used for statistical analyses for group comparisons, ROC curves and cutoffs performance. **Results:** Among PHPT patients, 16 (17%) had severe hypercalcemia (>12 mg/dL), 44 (45%) mild hypercalcemia, and 36 (38%) normocalcemic PHPT (NCHPT). Ca was significantly higher in PHPT (median: 11; min-max: 9.4-15.5) than C (9.4;8.3-10.2) ($p < 0.0001$). P was significantly lower in PHPT (2.4;1.4-3.9) than in C (3.5;2.1-4.5) ($p < 0.0001$). PTH was significantly higher in PHPT (135.2;57.6-1748) than in C (32.1;14-106.1) ($p < 0.0001$). Ca/P ratio was significantly higher in PHPT than in C. ROC curves analyses identified a cutoff of 3.5 for both Ca/P ratio and Ca/P ratio obtained by using Ca corrected by albumin. The sensitivity and specificity were 86% and 87%, respectively for Ca/P ratio and 89% and 93%, respectively for corrected Ca/P ratio ($p < 0.0001$). The diagnostic value of Ca/P ratio was significantly better if compared with PTH and Ca used alone or in combination. **Conclusions:** Ca/P ratio is a valuable highly sensitive, highly specific tool for the diagnosis of PHPT. Considering that Ca/P is simple to obtain, easily accessible in every clinical and laboratory setting worldwide, and inexpensive even when used in large sample size of patients, this

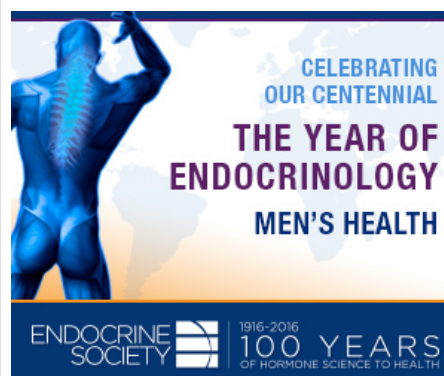
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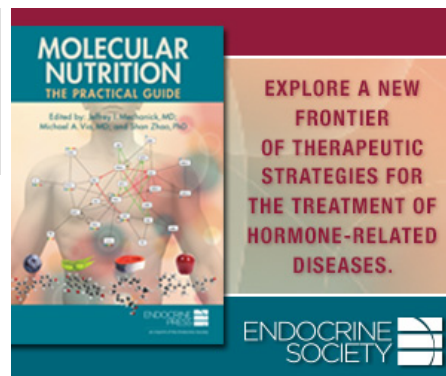
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Serum Calcium to Phosphorous Ratio (Ca/P) As a Simple, Inexpensive Screening Tool in the Diagnosis of Primary Hyperparathyroidism (PHPT)

Bruno Madeo¹, Elda Kara¹, Katia Cioni Cioni¹, Silvia Vezzani¹, Manuela Simoni¹ and Vincenzo Rochira¹

¹Unit of Endocrinology, Modena, Italy

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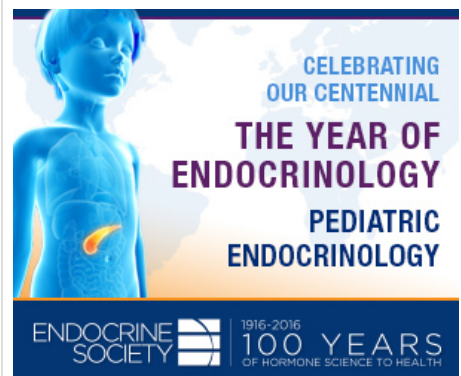
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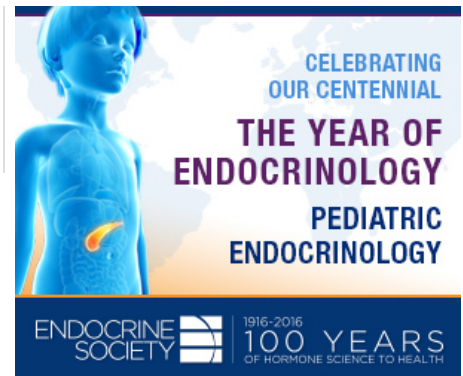
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