

PP 352 - CALCIUM TO PHOSPHORUS (CA/P) RATIO AS AN ACCURATE INDEX FOR THE DIAGNOSIS OF PRIMARY HYPERPARATHYROIDISM (PHPT) AND HYPOPARATHYROIDISM (HYPOPT)

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BACKGROUND: The diagnosis of PHPT and chronic HypoPT is still challenging, mainly due to the wide spectrum of clinical and biochemical presentation and the lack of validated diagnostic index in literature. The serum Ca/P ratio has been proposed as an accurate tool to diagnose PHPT in a small sample of patients, while no data is available about its possible application for HypoPT.

AIM: To validate the serum Ca/P ratio as a diagnostic index for PHPT and to investigate its diagnostic performance in the diagnosis of HypoPT by analyzing a large series of data coming from a multicenter study.

METHODS: Multicenter, retrospective, case-control study, including 432 PHPT patients and 217 HypoPT patients, compared with 389 controls. Main outcomes: serum Ca, P, albumin, creatinine, parathyroid hormone (PTH) and 25-OH vitamin D (only for controls and PHPT). *Statistical analysis:* Comparisons among groups were performed by the nonparametric Kruskal-Wallis, followed by the Dunn's post hoc test. The diagnostic accuracy of Ca/P ratio was investigated by receiver operator characteristics (ROC) curves in order to define cut-off points (with the highest sensitivity and specificity).

RESULTS: The Ca/P ratio was significantly different among groups, resulting higher in PHPT and lower in HypoPT patients than controls ($p < 0.0001$). At ROC curve analysis, the Ca/P ratio above 3.3 was defined for the diagnosis of PHPT (sensitivity 85.7%, specificity 85.3%), while the Ca/P ratio below 2.3 for the diagnosis of HypoPT (sensitivity 88.2%, specificity 87.9%). Considering the PHPT group, the cut-off of 3.1 for Ca/P was able to specifically identify patients with normocalcemic PHPT (sensitivity 80.3%, specificity 80.2%).

CONCLUSIONS: This study further validates the serum Ca/P ratio as a highly accurate diagnostic index for PHPT, defined by Ca/P above 3.3. For the first time, a Ca/P ratio below 2.3 is proposed to identify HypoPT patients. Our findings confirm the reliability of this index to screen and/or rule out disorders of Ca-P metabolism.