Performance of chloride/phosphate test in patients with primary hyperparathyroidism. Is it related to calcium level?

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Abstract

OBJECTIVE:
To examine the sensitivity of the chloride/phosphate (Cl/PO₄) ratio with a cut-off point of >33 as a diagnostic test for primary hyperparathyroidism (pHPT) in surgically proven patients, and its performance at different calcium levels.

METHODS:
This is a retrospective medical records based study. Data of 120 patients diagnosed with pHPT, already operated in the Department of Surgery, Cisanello Hospital, Pisa, Italy between March 2010 and June 2011 were reviewed. They were divided into 4 subgroups according to their calcium levels. The Cl/PO₄ ratio was measured for each patient, with a cut-off point of 33, sensitivity of Cl/PO₄ test was measured. Test sensitivity was calculated for each subgroup, and a correlation with the parathyroid hormone (PTH) level was investigated. Performance of the equation was tested for the normocalcemic patients with a suitable control group.

RESULTS:
The sensitivity of Cl/PO₄ ratio for the whole group was 0.883 (0.809-0.932). The sensitivity was 0.9340 (0.857-0.973) for patients with serum calcium above normal levels. A similar result of 0.933 (0.830-0.978) was demonstrated for the subgroup with hypercalcemia <1 (mg/dL) above normal level. Normocalcemic patients constituted 24%; for this subgroup, the sensitivity test was 0.724 (0.562-0.887), specificity was 0.763 (0.628-0.898), positive predictive value was 0.700 (0.536-0.864), and negative predictive value was 0.784 (0.651-0.916). No correlation was identified between the performance of formula and serum PTH level.

CONCLUSION:
The Cl/PO₄ test seems to be a good tool to anticipate pHPT and showed a fair performance in normocalcemic patients.