

## **EARLY DIAGNOSIS OF THYROTOXIC PERIODIC PARALYSIS: SPOT URINE CALCIUM TO PHOSPHATE RATIO**

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**BACKGROUND/AIMS:** To identify a clinically reliable index of thyrotoxic periodic paralysis (TPP), a life-threatening emergency with unique and effective therapies.

**METHODS:** Fifty-three consecutive patients with hypokalemic paralysis (HP) over a 3-year period and 30 thyrotoxic patients without paralysis as the thyrotoxic control group were enrolled in the study. For patients with HP, blood and second-void spot urine samples were obtained and measured by routine laboratory prior to therapy. For the thyrotoxic control group, blood and spot urine were collected when they visited outpatient clinics. Twenty-nine patients fulfilled the criteria for TPP.

**RESULTS:** Compared with the thyrotoxic control group, the TPP group had significant decreases in plasma potassium ( $K^+$ ) and phosphate concentrations associated with very low urine  $K^+$  and phosphate excretion. Compared with the non-TPP group, the TPP group had significantly lower plasma creatinine and phosphate levels, a significantly higher urine calcium-to-creatinine ratio (Ca/Cr  $0.25 \pm 0.12$  vs  $0.08 \pm 0.07$  mg/mg;  $p < 0.001$ ), and a significantly lower urine phosphate-to-creatinine ratio (P/Cr  $0.08 \pm 0.05$  vs  $0.31 \pm 0.23$  mg/mg;  $p < 0.001$ ). The urine calcium-to-phosphate ratio (Ca/P) had greater discriminatory power between TPP and non-TPP HP ( $4.1 \pm 2.3$  vs.  $0.5 \pm 0.6$  mg/mg;  $p < 0.001$ ). Using a urine Ca/P cut-off value of 1.7 mg/mg, sensitivity and specificity for TPP were 100% and 96%, respectively.

**DISCUSSION/CONCLUSIONS:**Hypercalciuria and hypophosphaturia are characteristic features of TPP.

**Key words:** Hypercalciuria, hypophosphaturia, thyrotoxic Periodic Paralysis