Differences in Clinical Features between Hypokalemic and Thyrotoxic Periodic Paralysis

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Background: Thyrotoxic periodic paralysis (TPP) and hypokalemic periodic paralysis (HPP) are medical emergency characterized by acute attacks of proximal muscle weakness and hypokalemia. The clinical differences between TPP and HPP might help for early diagnosis, treatment, and prevention.

Objective: To determine clinical features and outcomes between HPP and TPP patients.

Methods: A case-control study was designed in patients who visited emergency department during the last 10 years based on TPP and HPP diagnosis. The clinical features and outcomes between TPP and HPP were collected.

Results: A total of 101 patients (96% male), mean age 26.1±8.0 years, were included. There were no significant differences in serum and urine potassium between TPP and HPP. Of the variables associated with TPP, the main factors were DBP<70 mmHg (OR 2.93, 95%CI 1.19 to 7.18), tachycardia (OR 11.46, 95%CI 2.52 to 52.17), serum chloride≥102 mEq/L (OR 4.26, 95%CI 1.71 to 10.57), serum bicarbonate<24 mEq/L (OR 4.87, 95%CI 2.01 to 11.81), serum calcium<9.5 mg/dL (OR 4.00 95% CI 1.15 to 13.88), serum phosphate>2.1 mg/dL (OR 4.00, 95% CI 1.28 to 12.50), and serum magnesium<1.9 mg/dL (OR 9.14, 95% CI 2.86 to 29.28). There were no differences in patient outcomes between the two groups, including overshoot hyperkalemia, duration of treatment, and revisit.

Conclusion: Low DBP and sinus tachycardia are initial presentations to help distinguish between TPP and HPP. The combined biochemical derangements including high serum of chloride and phosphorus, and low serum of bicarbonate, calcium and magnesium are common in patients with TPP.

Keywords: Thyrotoxic periodic paralysis, Hypokalemia, Hypomagnesemia, Hypocalcemia, Hyperphosphahtemia