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Transient Pseudohypoaldosteronism in infants with urinary tract infection

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Case Study: Transient type I pseudohypoaldosteronism (PHA I), characterized by hyperkalemia, hyponatremia and metabolic acidosis, is one rare but severe complication of urinary tract infection (UTI). Without early recognition and timely management, PHA I could be a life-threatening complication. Limited data are available describing clinical features and prognosis in children with transient PHA I caused by UTI.

Twelve infants with UTI exhibited features of transient PHAI in the course of their UTI during Aug. 2013 to July 2017 were enrolled. Clinical symptoms, biochemical and image studies, and clinical outcome were recorded. Patients with bilateral renal hypodysplasia, underlying chronic renal insufficiency or preexisting electrolyte imbalance were excluded

Twelve infants, 8 male and 4 female, aged 1-7 months were diagnosed as UTI complicated transient PHAI. All had hyponatremia (128 ± 6.0 mmol/L), hyperkalemia (6.1 ± 0.4 mmol/L), metabolic acidosis (HCO_3^- 14 ± 3.0 mmol/L), low TTKG (3.2 ± 0.9), and relative high FENa (1.5 ± 0.5 %). The time from fever to occurrence of transient PHAI developed was 1-5 day (mean 2.4 ± 1.0 days). Poor oral feeding (83%) and frequent vomiting (75%) were two most common clinical manifestations. Nine patients had either urinary tract anomalies or pyelonephritis. Four patients had pyelonephritis and underlying urinary tract anomaly. All patients were treated with fluid hydration and furosemide. Additional oral kalimate and sodium carbonate were administered in 8 and 3 patients, respectively. One case needed intravenous calcium gluconate. One case had complicated hyperkalemia-induced ventricular tachycardia developed during hospitalization. All patients but one recovered within 7 days after the onset of transient PHAI.

Our findings highlight the facts that young onset, underlying urinary tract anomaly, and occurrence of pyelonephritis are the risk factors of development of transient PHA I. PHA I caused by UTI is not always a benign course. Early recognition and appropriate management achieve positive outcome.