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Acute Renal Tubular Dysfunction in Association with *Salmonella enteritidis*

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A 13-year-old boy presented with acute renal tubular dysfunction after an infection with salmonella enteritidis. The child recovered following treatment with ciprofloxacin for a week.

Key words: *Nephritis, Renal, Salmonella.*

Tubular dysfunction and acute tubulo-interstitial nephritis (AIN) have been described secondary to drugs, toxins as well as infections(1). Salmonellosis has been associated with immune glomerulonephritis, bacteremia or pyelonephritis(2). AIN secondary to *Salmonella typhimurium* has been reported in a 12-year-old girl(3) and adults(4,5) either in isolation or with schistosomiasis.

We describe a child with acute tubular dysfunction after an infection with *Salmonella enteritidis.*

Case Report

A 13-year-old boy presented with diarrhea and vomiting of 3 days duration associated with fever and generalized malaise. There was

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no history of drug ingestion or of travel abroad.

He was well grown (height 75th centile, weight 50th centile), but severely dehydrated with a poor capillary refill and cold peripheries. His blood pressure was normal (114/60 mm of Hg) with no other systemic abnormality.

Urine examination revealed a specific gravity of 1.010, 1+ blood and 1+ protein with no glucose. Microscopy revealed scanty red cells and no eosinophils. His hemoglobin was 19.1 g/dL with a normal red cell morphology. Plasma sodium was 125 mmol/L, potassium 2.8 mmol/L, urea 58 mmol/L, chloride 78 mmol/L, bicarbonate 32 mmol/L and creatinine 425 micromoles/L. The plasma phosphate was high at presentation (4.4 mmol/L) but on rehydration, dropped to 0.6 mmol/L. The plasma calcium, alkaline phosphatase and liver function tests remained normal. The fractional excretion of sodium was 2% and tubular phosphate reabsorption was 56% (normal >80%). Urinary chloride was normal with no aminoaciduria or glucosuria. Urine osmolality at presentation was 400 mOsm/kg. the daily urine output remained high at 2.5 litres. Mycoplasma titres were negative. Ophthalmic review was also normal. An abdominal ultrasound revealed enlarged kidneys.

Blood and stool cultures revealed Salmonella enteritidis (09, G phage type 6) but the urine culture was negative. He was rehydrated and treated with Ciprofloxacin for a week. The fever subsided in 48 hours while the diarrhea persisted for 5 days. Proteinuria and haematuria disappeared and the renal function settled to normal within 5 days (plasma creatinine 0.97 micromoles/L). He needed oral phosphate supplements for 3 weeks.

Presence of hyposthenuria, proteinuria, hematuria, phosphate loss in the urine and dehydration out of proportion with gastrointestinal symptoms, indicating polyuria suggested acute tubular dysfunction in association with Salmonella enteritidis. A negative urine culture ruled out pyelonephritis. As the renal function improved rapidly, a kidney biopsy was not performed. Hence, TIN could not be ascertained.

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