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# Evaluation of Renal Function Tests in Severely Dehydrated Children With Acute Gastroenteritis With and Without Hypertension

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## ABSTRACT

**The present study was designed to determine excretion of microalbumin, total protein urea, and creatinine, and serum urea, creatinine, uric acid, sodium, and potassium in acute gastroenteritis (AGE) patients with and without hypertension. 30 children (mean age = 5.07 ± 1.70 years) with Acute gastroenteritis with severe dehydration (fourteen boys, sixteen girls) who had history of *E. coli* infection, who admitted to the pediatric ward were included in the study. Age and sex-matched 30 children, not having any acute illness and renal disease were taken as control. Urinary total proteins and microalbumin were estimated by pyrogallol red method and immunoturbidimetric method, respectively. Other renal function tests were determined by commercial kit. In our study, we observed all patients were microalbuminuric and suffering from *E.coli* infection. The alterations of serum urea, creatinine, uric acid, sodium, potassium and also urinary urea, creatinine, total proteins levels in AGE children as compared to that of control group. We, therefore, conclude that these investigations should be performed routinely in AGE of children. Otherwise lack of appropriate and early treatment can lead to acute renal failure (ARF) or chronic renal failure (CRF).**

**Key words :** Acute gastroenteritis, Renal function tests, Microalbuminuria.

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Pediatric acute gastroenteritis remains an important clinical illness commonly encountered by family physicians. Its attendant problems of vomiting, diarrhea and dehydration continue to present significant risks to children and are responsible for considerable health care expenditures.

Estimates of the overall incidence of acute gastroenteritis range from 1.3 to 2.3 episodes of diarrhea per year in children under five years of age. Each year, more than 300 U.S. children die from this illness. Direct costs for hospital and outpatient care are estimated to exceed $2 billion per year[1]. Diarrheal diseases continue to be a major cause of morbidity and mortality in children in developing nations [11]. In India too diarrhea has been identified as a major killer and cause of illness [13]. Across the globe, there are an estimated 1.8 billion episodes of childhood diarrhea annually, mostly in developing countries, causing around 3 million childhood deaths in the developing world. About 80% of these deaths occur in the first two years of life [18]. About 9% of all hospitalizations of children younger than 5 years were reported to be a result of diarrhea [5].

Acute bacterial dysentery with *Escherichia coli* O157:H7 infection may have long-term health consequences beyond the period of acute illness. Receptors for *E. coli* O157:H7 Shiga toxin are found in the kidney. Exposure to this pathogen may result in substantial loss of nephrons and subsequent hyperfiltration, which can lead to long-term systemic hypertension and reduced kidney function. The most toxic form of *E. coli* O157:H7 infection is hemolytic uremic syndrome, and the potential for long-term renal dysfunction and hypertension after this condition is well described. It is unknown whether bacterial gastroenteritis in the absence of recognized hemolytic uremic syndrome may lead to clinically important long-term renal sequelae[8].

In our present study, we have made an attempt to throw light on alteration of renal function in patients with acute gastroenteritis with severe dehydration with hypertension and correlate these biochemical parameters.

## MATERIALS AND METHODS

This prospective study was done from January 2006 to October 2006 in Department Biochemistry, Government Medical College, Miraj. 30 hypertensive children (mean age = 5.07 ± 1.70 years) with Acute gastroenteritis (AGE) with severe dehydration (fourteen boys, sixteen girls) who had history of *E. coli* infection, loose motions, vomiting, fever, cough,