Serum Zinc Concentrations in Children with Acute Bloody and Watery Diarrhoea

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Abstract: Objectives: The role of zinc in the pathogenesis of diarrhoea is controversial. This study was conducted to compare serum zinc levels in children with acute diarrhoea to those found in healthy children. Methods: This case-control study was carried out at the Qazvin Children’s Hospital in Qazvin, Iran, between July 2012 and January 2013. A total of 60 children with acute diarrhoea (12 children with bloody diarrhoea and 48 children with watery diarrhoea) and 60 healthy children were included. Zinc levels for all subjects were measured using a flame atomic absorption spectrophotometer and data were analysed and compared between groups. Results: Mean serum zinc levels in the patients with acute bloody diarrhoea, acute watery diarrhoea and the control group were 74.1 ± 23.7 μg/dL, 169.4 ± 62.7 μg/dL and 190.1 ± 18.0 μg/dL, respectively (P = 0.01). Hypozincemia was observed in 50.0% of children with acute bloody diarrhoea and 12.5% of those with acute watery diarrhoea. None of the patients in the control group had hypozincemia (P = 0.01). Conclusion: Children with acute bloody diarrhoea had significantly reduced serum zinc levels in comparison to healthy children. However, a study with a larger sample size is needed to examine the significance of this trend.

Keywords: Zinc; Diarrhea; Children; Case-Control Study; Iran.

Diarrhoea is defined by the World Health Organization as the excretion of loose or watery stool at least three times within 24 hours. Acute diarrhoea occurs over a few hours or days with a total duration of less than 14 days. It is divided into two types: watery and bloody diarrhoea (dysestery). The main causes of acute diarrhoea include rotavirus, enteroinvasive Escherichia coli, Shigella and Salmonella. Diarrhoea is a common condition in children. Based on available data, 2.5 billion diarrhoea cases occur per year among children under five years of age in developing countries. More than 80% of these cases are observed in Asia and Africa, where the incidence of diarrhoea is highest.