Sultan Qaboos University Med J, February 2016, Vol. 16, Iss. 1, pp. e123–124, Epub. 2 Feb 16
Submitted 3 Dec 15
Accepted 20 Dec 15
doi: 10.18295/squmj.2016.16.01.027

LETTER TO THE EDITOR

Re: Serum Zinc Concentrations in Children with Acute Bloody and Watery Diarrhoea

رد: مستوى معدن الزنك في مصل دماء الأطفال المصابين بإسهال دموي أو مائي حاد

Sir,

I have two comments regarding the interesting study by Mahyar *et al*. published in the SQUMJ November 2015 issue.[1] Firstly, apart from the two limitations addressed by the authors—failure to estimate serum zinc concentrations after patients had completed their course of treatment and the small sample size—I believe that there is another important limitation to this study. Giardiasis is highly prevalent in developing countries.[2] It is commonly linked to chronic diarrhoea and malabsorption; available data indicate that giardiasis is the aetiological agent in 7.0% of childhood cases of acute diarrhoea.[3] In Iran, paediatric giardiasis still represents a substantial health threat, with an estimated prevalence of 10.6%.[4] Moreover, giardiasis has been shown to be markedly associated with hypozincaemia in the Iranian population.[5] In Mahyar *et al*.'s study, stool cultures were used to determine the causative pathogens in their studied population.[1] No growth was seen in 32 (53.3%) patients while 28 (46.7%) patients were found to have bacterial diarrhoea caused by pathogenic *Escherichia coli* (n = 15), *Shigella* (n = 10) and *Salmonella* (n = 3).[1] General stool examinations were not carried out prior to the cultures; this could have resulted in the exclusion of a significant number of patients with giardiasis-associated acute diarrhoea.[1] Accordingly, this might affect the accuracy of Mahyar *et al*.'s results.

Secondly, Mahyar *et al*. studied the correlation between serum zinc levels and various inflammatory and non-inflammatory variables.[1] The study showed a non-significant correlation between these variables and serum zinc levels; thus, these variables could not be considered predictors of zinc deficiency in Iranian children with acute diarrhoea.[1] This is an interesting observation as it contrasts with previously reported observations; Strand *et al*. studied the association between plasma zinc concentration and several clinical and biochemical variables in a cohort of Nepalese children with acute diarrhoea.[6] The study revealed an association between axillary temperature and plasma zinc concentrations. As such, a reduction was seen in the mean plasma zinc concentration per degree of increased axillary temperature (0.59 μmol/L per ^{o}C). Reduced plasma zinc levels were also associated with elevated levels of C-reactive protein, dysentery and decreased plasma albumin levels. The study also found that there were increased levels of plasma zinc in children who were dehydrated compared to those who were not.[6]

Mahmood D. Al-Mendalawi
Department of Paediatrics, Al-Kindy College of Medicine, Baghdad University, Baghdad, Iraq
E-mail: mdalmendalawi@yahoo.com

References

1. Mahyar A, Ayazi P, Chegini V, Sahmani M, Oveisi S, Esmaeily S. Serum zinc concentrations in children with acute bloody and watery diarrhoea. Sultan Qaboos Univ Med J 2015; 15:e512–16. doi: 10.18295/squmj.2015.15.04.012.
2. World Health Organization. The treatment of diarrhoea: A manual for physicians and other senior health workers. From: www.who.int/maternal_child_adolescent/documents/9241593180/en/ Accessed: Dec 2015.
3. El-Mohammady H, Mansour A, Shaheen HI, Henien NH, Motawea MS, Raafat I, et al. Increase in the detection rate of viral and parasitic enteric pathogens among Egyptian children with acute diarrhea. J Infect Dev Ctries 2012; 6:774–81. doi: 10.3855/jidc.2349.
4. Daryani A, Sharif M, Nasrolahei M, Khalilian A, Mohammadi A, Barzegar G. Epidemiological survey of the prevalence of intestinal parasites among schoolchildren in Sari, northern Iran. Trans R Soc Trop Med Hyg 2012; 106:455–9. doi: 10.1016/j.trstmh.2012.05.010.
5. Zarebavani M, Dargahi D, Einollahi N, Dashti N, Mohebali M, Rezaeian M. Serum levels of zinc, copper, vitamin B12, folate and immunoglobulins in individuals with giardiasis. Iran J Public Health 2012; 41:47–53.
6. Strand TA, Adhikari RK, Chandyo RK, Sharma PR, Sommerfelt H. Predictors of plasma zinc concentrations in children with acute diarrhea. Am J Clin Nutr 2004; 79:451–6.

Response from the Authors

Sir,

We thank you for your comments on our recently published article.[1] As mentioned in our article, the main objectives of our study were to compare serum zinc levels in children with acute diarrhoea and in healthy control subjects, as well as to compare serum zinc concentration in children with acute watery versus bloody diarrhoea, regardless of the identification of aetiological factors such as rotavirus infection or giardiasis.

The diagnosis of acute diarrhoea, acute watery diarrhoea and dysentery was based on the definitions of the World Health Organization.[2] In general, our goal was to prove that patients with acute diarrhoea, particularly acute bloody diarrhoea, have low concentrations of serum zinc. We aimed to suggest that zinc should be prescribed to all patients with acute diarrhoea regardless of their aetiologic factors. In developing countries, certain diagnostic facilities (including cultures, rapid diagnostic or polymerase chain reaction tests) for the diagnosis of aetiological agents are unavailable. Giardiasis can present as acute diarrhoea and the diagnosis is traditionally established by microscopic evidence of trophozoites or cysts in stool specimens. However, stool enzyme immunoassay or direct fluorescent antibody tests for *Giardia* antigens are the tests of choice for giardiasis. Under certain conditions, it may be necessary to use other diagnostic methods such as aspiration or biopsy of the duodenum or upper jejunum.[3]

***Abolfazl Mahyar,[1] Parviz Ayazi,[1] Victoria Chegini,[1] Mehdi Sahmani,[2] Sonia Oveisi,[3] Shiva Esmaeily[4]**

Departments of [1]Pediatrics and [4]Statistics and Centres for [2]Cellular & Molecular Research and [3]Metabolic Diseases Research, Qazvin University of Medical Sciences, Qazvin, Iran
**Corresponding Author e-mail: abolfazl473@yahoo.com*

References

1. Mahyar A, Ayazi P, Chegini V, Sahmani M, Oveisi S, Esmaeily S. Serum zinc concentrations in children with acute bloody and watery diarrhoea. Sultan Qaboos Univ Med J 2015; 15:e512–6. doi: 10.18295/squmj.2015.15.04.012.
2. World Health Organization. The treatment of diarrhoea: A manual for physicians and other senior health workers. From: www.who.int/maternal_child_adolescent/documents/9241593180/en/ Accessed: Dec 2015.
3. John CC. Giardiasis and balantidiasis. In: Kliegman RM, Stanton B, St. Geme J, Schor NF, Eds. Nelson Textbook of Pediatrics, 20th ed. Philadelphia, Pennsylvania, USA: Elsevier, 2015. Pp. 1692–94.