

ZINC SUPPLEMENTATION FOR RESPIRATORY ILLNESS AND ACUTE GASTROENTERITIS AS COMPLEMENT TREATMENT FOR COVID-19

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Summary

An outbreak of atypical pneumonia by the novel coronavirus disease 2019 (COVID-19), has been reported in Wuhan, China since December, 2019. It is a severe respiratory illness with many other symptoms such as gastroenteritis. Clinical trials has proved that Zn is a promising supplement that can ease of cough, fever and vomiting, dysentery, respiratory illness, diarrhea duration and recovery, duration of hospitalization and morbidity. This article suggests a potential role, which should be considered in the clinical management, and safeness for Zn supplementation for respiratory illness and acute gastroenteritis as compliment treatment for covid-19.

Introduction

Covid 2019 is an infectious disease that is causing severe respiratory illness with many other symptoms such as gastroenteritis. It is associated with a high rate of mortality. As many of the fundamental questions related to its pathogenesis and immune responses are unanswered, suggesting a concrete optimal treatment is not possible. Until today there is no approved antiviral treatment for this viral infection. Many drugs such as chloroquine and hydroxychloroquine, and remdesivir as antiviral agent are entering clinical trials to confirm for their suitability in treatment. It is still unclear to understand the disease severity, is this virus is potential to cause morbidity and mortality if the patient to develop acute gastroenteritis. Covid 19 is an emerging viral disease of global concern.

One promising option to compliment the treatment of respiratory illness and acute gastroenteritis is the

administration of zinc beside of prevention of dehydration through oral rehydration solutions or intravenous fluids which. The beneficial antidiarrheal effect of zinc has been well studied and discussed in a broad-spectrum. Zinc is shown in the literature to exhibits improved absorption of water and an enhanced immune response. Having been used extensively in clinical trials, zink is a promising candidate for treatment of AGE in Covid patient. UNICEF and The World Health Organization recommend oral zinc as adjunct therapy with oral rehydration solution (ORS) as a universal treatment for all children with diarrhea. This viewpoint is aiming at discussing the possible use of Zinc supplementation for respiratory illness and acute gastroenteritis as complement treatment for Covid-19.

Respiratory illness recovery

In a study examined the effect of zinc supplementation on the treatment outcome in children conducted in A randomized, double blinded, placebo-controlled trial on 64 hospitalized children with Acute Lower Respiratory Tract Infections (ALRI) ALRI, who were aged between 2 and 60 months, found that ALRI cessation was faster in children who received zinc supplementation, and that their hospital stay was shorter, well-tolerated, with adverse events. [1]

Penny et al. have showed that The Zn group had fewer respiratory illness in groups to receive a daily supplement of 10 mg Zn alone (Zn; n = 81), than in than did the group zinc plus vitamins and other minerals [2]

In one study, a decrease of 15% in days and 12% in duration of episode in acute respiratory infections was observed in randomized double blind controlled trial conducted for a duration of 2 weeks with prophylactic zinc

supplementation on acute respiratory infections. Also was found, the incidence of acute lower respiratory infections decreased by 62%. One important finding in this study was there were no drop outs due to side effects. The researcher of the study concluded that prophylactic zinc supplementation for two weeks may reduce the morbidity due to acute lower respiratory infections [3].

Cough, fever and Vomiting, dysentery

Zinc supplementation resulted in a markedly lower incidence of morbidity from cough, fever, and vomiting in the stunted children; evidence from A randomised, double-blind, placebo-controlled trial in both stunted and non-stunted children who to receive a zinc supplement 6 days a week for 6 months. [4]

The Zn group had a lower prevalence of fever and fewer dysentery and cough than did the Zn+VM group, and a lower prevalence of cough than did the placebo group; result derived from the test of two hundred forty-six children aged 6-35 month with persistent diarrhea who was randomly assigned to 1 of 3 groups to receive a daily supplement, at 1-2 times recommended daily intakes, of 10 mg Zn alone, zinc plus vitamins and other minerals after the diarrhea episode ended.

Diarrhea duration and recovery

Zinc supplemented patients had 12% shorter duration of diarrhea in patient who received 30 mg elemental zinc per day until recovery; evidence from a double blind, randomized, placebo controlled trial in 179 children aged 3-14 years with watery diarrhea in Dhaka Hospital, Bangladesh, [5].

A shortening of mean time to recovery, stool output was 28% less and duration 14% shorter in the zinc supplemented group children assigned to receive zinc (20 mg elemental zinc per day); evidenced from study conducted in a diarrhoeal disease hospital in Dhaka, Bangladesh involving children, 3 to 24 months old [6].

There was a marked reduction in the duration of the diarrhoea (1.1 vs 2.6 days) and of watery stools in the zinc-supplemented in children with acute diarrhoea in Brazil, found in a double-blind, placebo-controlled, randomised, clinical trial in children <5 years of age [7]

Stool output and frequency

Zinc treatment reduced total stool output and stool output per day of diarrhea, with the risk of continued diarrhea was lower with less proportion of diarrheal episodes lasting ≥ 5 days or ≥ 7 ; evidenced from a study which evaluated the effect of zinc treatment as an adjunct to oral rehydration therapy on stool output and diarrheal duration in children using a double-blind, randomized,

controlled trial at two urban hospitals in New Delhi involving a total of 287 dehydrated male patients, ages 3 to 36 months, with diarrhea for ≤ 72 hours were enrolled. [8]

Stool frequency over the first 4 days after enrollment was lower in children in the study group; discovered in a double-blind placebo-controlled study group comprised 40 subjects with low zinc levels and 52 subjects with normal zinc levels conducted to evaluate the effects of zinc supplementation of duration of diarrhea in malnourished Turkish children. [9].

Duration of hospitalization

The duration of hospitalisation was 60 (44–72) hours in the zinc group and 84 (56–136) hours in the controls, found in a double-blind, randomised, placebo-controlled trial conducted in the Srinakharinwirot University Hospital's Paediatric Department, Thailand, where 86 patients was 2.5 years (6 months to 9.3 years) were randomly allocated to receive either zinc bisglycinate (15 mg elemental zinc) or a placebo [10].

Morbidity

Morbidity information was collected on weekdays basis in a similar study of two hundred forty-six children aged 6-35 month with persistent diarrhea showed that morbidity was greater after supplementation with zinc plus multivitamins and minerals than it was after supplementation with zinc alone [2].

Recommendations for future research

This article suggests a potential role, which should be considered in the clinical management, and safeness for Zn supplementation for respiratory illness and acute gastroenteritis as complement treatment for covid-19. Future research should include not only a clinical trial on Zn efficacy as complement treatment, but also *in vitro* studies of the effect of Zn on anti-respiratory distress and anti-gastroenteritis to further elucidate the mechanism of action against coronaviruses.

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