Zinc supplementation in prediabetes mellitus

Abstract

Introduction: Certain pharmacological and lifestyle interventions have been shown to reduce progression of prediabetes. We aimed to perform a systematic review and meta-analyses of studies assessing the outcomes of zinc supplementation in individuals with prediabetes.

Evidence acquisition: A comprehensive search was conducted in PubMed, SciVerse Scopus and Web of Science databases. Controlled clinical trials in prediabetics individuals, on zinc supplementation with or without other nutrients, assessing at least one accepted glycemic parameter as an outcome were deemed eligible.

Evidence synthesis: Three papers were included in the systematic review and meta-analysis, with a total of 265 participants. Duration of zinc supplementation ranged from 6-12 months. The zinc dose ranged from 20-30 mg/day. In the pooled analysis, zinc supplementation significantly reduced FBG both when given alone (-10.86 mg/dL; 95% CI, -14.74 to -6.98; P<0.001) and with other micronutrients (-11.77 mg/dL; P<0.001). Similarly, 2hr-OGTT blood glucose was reduced by 21.08 mg/dL (95% CI, -40.05 to -2.11; P=0.03) in the pooled analysis of studies using zinc alone and in combination with other micronutrients. One study demonstrated a significant reduction of HbA<inf>1c</inf> by 0.5% with combined supplementation, while another reported a significant reduction in CRP with zinc supplementation. When all trials were considered, TC, HDL-c and HOMA-β showed significant improvement. Zinc supplementation significantly improved the zinc status from baseline.

Conclusions: Zinc supplementation demonstrated beneficial effects on glycemic and lipid parameters in individuals with prediabetes. It may have the potential to reduce the prevalence of prediabetes and control associated morbidity and mortality.