

“We sought to determine a safe dose of intravenous (IV) Zn to restore pZn in critically ill children” Cvijanovich et al (2015).

Reference:

Cvijanovich, N.Z., King, J.C., Flori, H.R., Gildengorin, G., Vinks, A.A. and Wong, H.R. (2015) A Safety and Dose Escalation Study of Intravenous Zinc Supplementation in Pediatric Critical Illness. Journal of Parenteral & Enteral Nutrition. February 19th. .

Study of zinc intravenous infusion supplementation in pediatric critical illness
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Abstract:

Background: Critically ill children have low plasma zinc (pZn), correlating with organ failure. Since Zn influences inflammation, immune function, and glucose control, Zn supplementation is a plausible therapeutic modality. We sought to determine a safe dose of intravenous (IV) Zn to restore pZn in critically ill children.

Methods: Stepwise dose escalation study of IV Zn supplementation at a tertiary children’s hospital. All children (5, or ≥ 1 new organ failure) were eligible. After consent, patients were sequentially enrolled into 4 dosing groups: (1) no zinc, (2) Zn250: 250 mcg/kg/d ZnSO₄, (3) Zn500: 500 mcg/kg/d ZnSO₄, or (4) Zn750: 750 mcg/kg/d ZnSO₄. ZnSO₄ was administered 3 times daily for 7 days. pZn was measured at baseline, end of first ZnSO₄ infusion, 1 hour postinfusion, and 7 hours postinfusion on day 1, then daily through days 2–7. Interleukin-6 (IL-6), C-reactive protein (CRP), and lymphocyte subsets were measured on days 1 and 3. Glucose was measured 3 times daily for 7 days.

Results: Twenty-four patients were enrolled. Baseline demographics were similar among groups. Baseline pZn was low in all patients (mean, 41.8 [16.0] mcg/dL). pZn increased over the study period in supplemented groups; however, mean pZn in the Zn750 group exceeded the 50th percentile. pZn was not associated with IL-6, CRP, or lymphocyte subsets among groups. Degree of hyperglycemia did not differ among groups. No patient had a study-related adverse event.

Conclusions: IV zinc supplementation at 500 mcg/kg/d restores pZn to near the 50th percentile and is well tolerated.



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