



Cartas científicas

The effect of vitamin A supplementation on retinol concentrations of children with anaemia

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Iron deficiency seems to impair vitamin A metabolism leading to an increase in retinol sequestration to the liver and/or impairment in the activity of hepatic retinyl ester hydrolases, decreasing vitamin A mobilization and blood concentration.¹ Such observations led to speculations regarding the efficacy of vitamin A supplementation in regions where iron deficiency coexist. In Brazil, a risk country for subclinical vitamin A deficiency —VAD, the Health Ministry implemented a supplementation programme— administration of mega doses of vitamin A (200,000 IU) to children ages 6 months-5 years in underprivileged regions.² This study aimed to evaluate the impact of vitamin A supplementation on anaemia of VAD children, 36-83 months, from Teresina city, Brazil. Excluded from the study were children who had received transfusions of blood/blood derivatives and iron and/or vitamin A supplements in the last 6 months, children under immunosuppressive or corticosteroid therapy, and with HIV infection, chronic diseases or severe infection. An adequate zinc status was inclusion criteria, according to serum zinc (atomic absorption spectrophotometry) and alkaline phosphatase (fluorescence) concentrations. Serum retinol, ferritin and haemoglobin-Hb were determined by HPLC, chemiluminescence and a haematological analyzer, respectively. The children received 200 000IU of vitamin A, and after two months, vitamin A concentration was determined again. The cut off points used to identify deficiencies were: retinol < 0.70 µmol/L; Hb < 110 g/L; ferritin < 12 g/dL. Difference between means was tested by the Mann-Whitney test, and correlations were determined by the Spearman's correlation

Variables	Hb < 110 g/L mean (SD) n = 12	Hb ≥ 110 g/L mean (SD) n = 36	P value ⁽¹⁾
Serum retinol (µmol/L)			
Before supplementation	0.50 (0.12)	0.54 (0.14)	0.167
After supplementation	2.08 (1.00)	1.74 (0.73)	0.317
After/before difference	1.59 (1.04)	1.19 (0.75)	0.238

⁽¹⁾Mann-Whitney test.

coefficient. Forty eight children with VAD were included in the study; 60.42% of them were boys. Mean (SD) concentrations of retinol and Hb before supplementation were 0.52 (0.13) µmol/L and 113.42 (15.04) g/L, respectively, without difference between gender. Concomitant vitamin A deficiency and anaemia were observed in 25% of the children, reinforcing the knowledge that iron and vitamin A deficiencies are important nutritional problems in Brazil.³ After supplementation all children reached acceptable/normal retinol concentrations [1.82 (0.82) µmol/L]. Retinol concentrations before, after and after/before difference was similar in children with and without anaemia (table I). The increase of retinol concentrations after supplementation suggests the efficacy of the intervention in the recovery of this vitamin deficiency, as reported in another study,⁴ independent of anaemia. A study involving rats supplemented with iron and vitamin A showed a significant increase in retinol concentrations of those rats compared to controls.⁵ Despite the limitations of our study, it confirms the efficacy of vitamin A supplementation in populations with adequate zinc status and high prevalence of anaemia.

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