Abstract

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Iron supplementation in goitrous, iron-deficient children improves their response to oral iodized oil.

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OBJECTIVE: In developing countries, many children are at high risk for both goiter and iron-deficiency anemia. Because iron deficiency may impair thyroid metabolism, the aim of this study was to determine if iron supplementation improves the response to oral iodine in goitrous, iron-deficient anemic children.

DESIGN: A trial of oral iodized oil followed by oral iron supplementation in an area of endemic goiter in the western Ivory Coast.

METHODS: Goitrous, iodine-deficient children (aged 6-12 years; n=109) were divided into two groups: Group 1 consisted of goitrous children who were not anemic; Group 2 consisted of goitrous children who were iron-deficient anemic. Both groups were given 200mg oral iodine as iodized oil. Thyroid gland volume using ultrasound, urinary iodine concentration (UI), serum thyroxine (T(4)) and whole blood TSH were measured at baseline, and at 1, 5, 10, 15 and 30 weeks post intervention. Beginning at 30 weeks, the anemic group was given 60mg oral iron as ferrous sulfate four times/week for 12 weeks. At 50 and 65 weeks after oral iodine (8 and 23 weeks after completing iron supplementation), UI, TSH, T(4) and thyroid volume were remeasured.

RESULTS: The prevalence of goiter at 30 weeks after oral iodine in Groups 1 and 2 was 12% and 64% respectively. Mean percent change in thyroid volume compared with baseline at 30 weeks in Groups 1 and 2 was -45.1% and -21.8% respectively ($P<0.001$ between groups). After iron supplementation in Group 2, there was a further decrease in mean thyroid volume from baseline in the anemic children (-34.8% and -38.4% at 50 and 65 weeks) and goiter prevalence fell to 31% and 20% at 50 and 65 weeks.

CONCLUSION: Iron supplementation may improve the efficacy of oral iodized oil in goitrous children with iron-deficiency anemia.

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