

Abstract

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Persistence of goiter despite oral iodine supplementation in goitrous children with iron deficiency anemia in Côte d'Ivoire.

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BACKGROUND: In developing countries, many children are at high risk of goiter and iron deficiency anemia. Because iron deficiency can have adverse effects on thyroid metabolism, iron deficiency may influence the response to supplemental iodine in areas of endemic goiter.

OBJECTIVE: The aim of this study was to determine whether goitrous children with iron deficiency anemia would respond to oral iodine supplementation.

DESIGN: A trial of oral iodine supplementation was carried out in an area of endemic goiter in western Côte d'Ivoire in goitrous children ($n = 109$) aged 6-12 y. Group 1 ($n = 53$) consisted of goitrous children who were not anemic. Group 2 ($n = 56$) consisted of goitrous children who had iron deficiency anemia. At baseline, thyroid gland volume and urinary iodine, thyrotropin, and thyroxine were measured by using ultrasound. Each child received 200 mg I orally and was observed for 30 wk, during which urinary iodine, thyrotropin, thyroxine, hemoglobin, and thyroid gland volume were measured.

RESULTS: The prevalence of goiter at 30 wk was 12% in group 1 and 64% in group 2. The mean percentage change from baseline in thyroid volume 30 wk after administration of oral iodine was -45.1% in group 1 and -21.8% in group 2 ($P < 0.001$). Among the anemic children, there was a strong correlation between the percentage decrease in thyroid volume and hemoglobin concentration ($r(2) = 0.65$).

CONCLUSION: The therapeutic response to oral iodine was impaired in goitrous children with iron deficiency anemia, suggesting that the presence of iron deficiency anemia in children limits the effectiveness of iodine intervention programs.

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