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Does iodine replacement prevent relapse in Graves' disease?

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Anti-thyroid drugs (ATD) represent a popular option for patients with Graves' disease due to their low cost and favorable harm-benefit ratio. However, on cessation of ATD, up to 70% of patients may relapse (1, 2), especially in the presence of a large goiter and elevated circulating levels of anti-TSH Receptor Antibody (TRAb) (3).
The relation between iodine dietary intake and relapse following discontinuation of ATD is debated. Some researchers maintain that the iodine may reduce the efficacy of ATD, perhaps by altering the antigenicity of thyroglobulin, while others have come to the opposite conclusion (4).
A recent randomized controlled trial from China, a region with insufficient iodine intake (4), has further investigated the role of iodine in the diet and the incidence of relapse after cessation of ATD.
All the 484 participants had newly diagnosed Graves' disease, and met the World Health Organization criterion of insufficient iodine dietary intake (urinary iodine <100 µg/L). After 12 months on ATD, followed by one month on a diet with reduced iodine content, the patients were randomized into 2 groups and monitored quarterly to evaluate the incidence of relapses:

- Group 1, on iodine supplementation, administered as 10 g/day of iodinated salt (corresponding to about 200 µg/day of iodine). 203 patients completed the study (61 males and 142 females, average age 32.2 ± 10.5 years).
- Group 2, on usual iodine poor diet. 202 patients completed the study (61 males and 141 females, average age 31.9 ± 11.8 years).

During the period of ATD therapy, no difference in serum thyroid hormones was detectable between the two arms. The urine was tested every 3 months in both groups. In group 1 (iodine supplementation) the concentration of iodine in the urine remained above 100 µg/L (indicating successful supplementation); in group 2 (no iodine supplementation), the concentration of iodine in the urine persisted below 61 µg/L.
Throughout the 12 months of observation, starting in the first trimester, the patients in group 2 had a statistically significant increase in the risk of relapse. Twelve months after halting ATD, the percentage of relapse in group 1 was 35.5% in comparison to 45.5% in group 2 (HR 1.38, 95% CI 1.01-1.88, p=0.04). The serum concentration of TRAb was also significantly inferior in group 1.
In conclusion, this study suggests that an adequate dietary intake of iodine (about 200 µg/day) may reduce relapse of thyrotoxicosis following suspension of therapy with ATD, possibly through a reduction of serum TRAb.

References

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