Inadvertent Iodine E:xcess Causing Thyroto:xic Hypokalemic Periodic Paralysis

The recent interesting article by Ohye et al[1] addressed the continuing problem of nonprescribed and occult medication use. l applaud the scientific dedication of the 2 lead authors who took it upon themselves to ingest the implicated tablets, which have been analyzed to contain portions of tetraiodothyronine (T_4) and triiodothyronine (T_3). Most would have been convinced without the need to take this extra step, which is unnecessary for 2 reasons. The first is that data on the pharmacokinetic of T_3 and T_4 are well established.[2] The 34 μg to 45 μg of T_4 would have few biological effects owing to the binding of T_4 to circulating proteins. As the half-life of T_4 is 7 to 10 days, a good 4 to 6 weeks of consistent T_4 ingestion would need to occur to ensure a therapeutic level. The elevated T_3 level is consistent with its short half-life, and the dose approximates that used therapeutically. Thus, its transient use is reflected biologically in a mild reduction in thyroid-stimulating hormone level. The second reason is the effect of self-testing, which may unmask other unheralded medical conditions, particularly that which is specific to my and the authors' heritage. This is best highlighted in the following clinical vignette.

A 35-year-old male triathlete of Asian descent was seen for recurrent weakness in both lower limbs, particularly at night and after exercise. He was previously generally healthy with no thyroid disease. Findings from clinical examination showed a thin, fit-looking man who weighed 58 kg and was 1.68 m tall (body mass index [calculated as weight in kilograms divided by the square of height in meters), approximately 20). His resting pulse rate was 92 beats/min with a mild peripheral tremor and brisk reflexes but no goiter. His potassium level was 1.8 mmol/L; thyrotropin, 0.05 mIU/L; free T_4, 2.4 ng/dL (30.7 pmol/L) (reference range, 0.8-1.9 ng/dL [10.0-24.5 pmol/L]); and free T_3, 577.9 pg/dL (8.9 pmol/L) (reference range, 246.8-441.6 pg/dL [3.8-6.8 pmol/L]). His serum thyroglobulin level was 109.5 ng/mL (reference range, <32 ng/mL), and his thyroid pertechnetate uptake scan was markedly reduced. On further questioning, he admitted to taking 5, sometimes up to IO, kelp tablets daily in the belief that they would improve his general strength and endurance. According to the product information, each tablet contains approximately 50 μg of iodine. His urinary iodine excretion was consistent with iodine overload at 155 μg/L (urinary iodine repletion status, > 100 μg/L). His periodic weakness disappeared after he was advised to cease self-administering the tablets. At 6-month follow-up, he was euthyroid both clinically and biochemically with a serum potassium level of 4.1 mEq/L.

This voluntary T_4 and T_3 challenge test is not new and historically was well described by Shinosaki in 1925.[3] Large doses of thyroid extract were experimentally given to 7 patients (with controls) with a clinical history of periodic paralysis. The result was a definite increase in the frequency and severity of the paralytic attacks.

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In reply

The vignette by Tran regarding his patient is *irrelevant to our study. Tran's intriguing case requires further study before reporting. Can he reproduce the same clinical picture by giving iodine or kelp to his patient? Does his patient have any underlying thyroid disease? Did he measure thyroid hormone content in the kelp preparation? Many questions can be raised before accepting his concept of kelp-induced hypokalemia periodic paralysis in thyrotoxicosis. Administration of herb medicines to the* 2 *authors can be easily justified because T_3 and* T_4 *contents in the herb medicines were not known at that time.*

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Antlretrovlral Therapy and the Prevalence and Incidence of Diabetes

In the study by Brown et al,[1] the authors did not mention several limitations that might have an important impact on the interpretation of the results. First, the study only included men, who were mostly white (ap-

proximately 86%). Therefore, the results cannot be extrapolated to women and other ethnic groups. Second, the family history of diabetes was not ascertained in the study participants, and this could have confounded the magnitude of differences in prevalence and incidence of diabetes between the 2 study groups. Third, the reported prevalence and incidence rates of diabetes were likely to be overestimated because the diagnosis of diabetes was not confirmed by a repeated measurement of fasting plasma glucose.

In addition, the article[1] suffered from multiple errors in the organization of the references that led to significant confusion and sometimes difficulty in following the manuscript. In fact, several references mentioned in the text did not match the references listed at the end of the article. Thus, reference numbers 5, 6, 7, 8, 9, 11, 12, 15, and 26 in the text were misplaced and corresponded to reference numbers 7, 8, 9, 1, 10, 12, 11, 16, and 27, respectively, in the list of references.[1]

Finally, the publication year of the study by Walli et al,[2] reference number 7 in the list of references,[1] is 1998 and not 2001.

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In reply

Mikhail and Cope comment on our recent article, "Antiretroviral Therapy and the Prevalence and Incidence of Diabetes Mellitus in the Multicenter AIDS Cohort Study,"[1] in which we conclude that the incidence of diabetes mellitus in men with human immunodeficiency virus (HIV) infection undergoing highly active antiretroviral therapy (HAART) was 4 times greater than that found in HIV-seronegative men.

First, Mikhail and Cope state that we did not mention that our results cannot be extrapolated to women or nonwhite racial groups. Our results may or may not generalize to women and nonwhite racial groups as stated in the second paragraph of the "Comment" section. Indeed, the rate ratio of diabetes mellitus owing to HIV and HAART will generalize to these other groups if sex and race do not modify the relation between HIV and HAART and diabetes mellitus, assuming there is *no measurement error. Second, Mikhail and Cope correctly point out that we did not account for family history in the analysis presented in our article. Family history data were available from April* 2000 *onward in our cohort, a year after the baseline visit for our analysis. Adjusting for family history of diabetes when possible in the incidence analysis alters the summary rate ratio for HIV-infected men receiving HAART compared with men without HIV from 4.1 (95% confidence interval, 1.85-9.16) to* 3.9 *(95% confidence interval, 1. 75-8. 72), a 5% change. Therefore, accounting for measured family history does not affect the interpretation of our findings. Third, Mikhail and Cope state that we did not mention the limitation that we defined diabetes mellitus based on a single fasting glucose measurement, but this* is *the first limitation addressed in the last paragraph of the "Comment" section.*

Finally, Mikhail and Cope astutely observe that the references were not published in the correct sequence; the ARCHIVES is *publishing a correction in this issue for the misnumbered reference section.*

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Differential Loss to Follow-up by Insurance Status in the Health and Retirement Study: Implications for National Estimates on Health Insurance Coverage

We read with interest the article by Baker and Sudano[1] titled "Health Insurance Coverage During the Years Preceding Medicare Eligibility." The combination oflacking health insurance and the benefits from affordability of medical care that come with health insurance are greatest in the years preceding Medicare eligibility. Baker and Sudano[1] estimated the percentage of uninsured individuals as the Health and Retirement Study (HRS) cohort aged over time. They found that the percentage uninsured respondents aged 51 to 57 years in the baseline wave dropped from 14.3% in 1992 to 8.2% in 2000. We used the Current Population Survey's (CPS) Annual Demographic Survey, a nationally representative cross-sectional survey of 50 000 households conducted by the Bureau of the Census, to estimate the percentage uninsured for the same age cohorts and found it to be stable between 1992 and 2000 (Table).

Table. Percentage Uninsured From 1992 to 2000

Year	Age Cohort, y	% Uninsured	
		HRS*	CPSt
1992	51-57	14.3	14.9
1994	53-59	10.8	13.6
1996	55-61	9.7	14.3
1998	57-63	8.8	13.9
2000	59-64	8.2	15.0

Abbreviations: CPS, Current Population Survey; HRS, Health and Retirement Study.
*Estimates from Baker and Sudano.[1]
tEstimates from the authors' analysis of CPS.