An epidemic of nonexistent iodine deficiency due to inappropriate urine iodide testing and reference ranges

There has been a recent explosive increase in urine iodide testing at Labplus, the diagnostic laboratory for Auckland Hospital, New Zealand. Most of these requests have come from general practitioners. Discussions with some of these requestors have revealed that there is a belief among many patients, and some doctors, that (a) iodine deficiency is a common clinical problem in New Zealand, and (b) the urine iodide test is the best way to diagnose iodine deficiency.

To counter these misconceptions, it may be helpful to re-state some of the facts about the urine iodide test:

- Iodine deficiency is diagnosed by examination of the thyroid gland for goitre and measurement of thyroid hormones. Iodine deficiency has no known effects other than on thyroid hormones.¹ (For example, there is no good evidence that "subclinical" iodine deficiency causes chronic fatigue syndrome or increases breast cancer risk, despite what appears on the Internet.)

- The urine iodide test is not appropriate to diagnose iodine deficiency in individuals.² Urine iodide levels are variable from day to day in a given patient, and have a low predictive value for iodine deficiency. Even an accurate 24-hour collection cannot be reliably used to assess iodine status in an individual.³ This is because urine iodide reflects only recent iodine intake, whereas the thyroid gland can store large amounts of iodine. A "low" urine iodide no more indicates iodine deficiency than a low urine sodium indicates sodium deficiency. Using it to test for iodine deficiency is of no benefit to patients, and may give misleading results, leading to harmful interventions, as excessive iodine supplementation can cause hyperthyroidism and may increase the risk of autoimmune thyroid disease.

- Urine iodide levels have been widely used in epidemiology to assess the iodine status of populations. Some laboratories (including the author's) have historically quoted urine iodide reference ranges which are based on population medians. These ranges are meant for population studies, and should not be applied to individuals. The majority of individuals with urine iodide levels which are "low" in relation to guidelines for population medians are not iodine deficient.

- Measurement of urinary iodide in individual patients has only two indications: (1) assessment of iodine status at the time of therapeutic radioiodine administration, and (2) as part of the investigation of some cases of mild hyperthyroidism. Endocrinologists may need this information, but general practitioners should not need to do this test.

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References: