Iodine deficiency does exist but is difficult to assess in individuals

It is with concern that we read the letter by James Davidson entitled An epidemic of nonexistent iodine deficiency due to inappropriate urine iodine testing and reference ranges published in the NZMJ (http://www.nzmj.com/journal/122-1291/3519) on 13 March 2009.

We strongly disagree with his statement that iodine deficiency is non-existent in New Zealand. The re-emergence of iodine deficiency in New Zealand (and Australia) since the 1990s has been well documented with a number of studies reporting iodine deficiency in different groups of the population including children, pregnant women and adults.1-6

Mild iodine deficiency was confirmed in a large, nationally representative sample of children as part of the 2002 Children’s Nutrition Survey (CNS02);7 a similar study was conducted in Australia in 2004.8 The traditionally held view that there are no consequences of mild iodine deficiency because TSH, T4 and T3 concentrations still fall within the normal reference range is being challenged; experts believe that even mild iodine deficiency can have adverse effects on health.9-11

To improve iodine intakes and safeguard iodine-related health in Australia and New Zealand, the mandatory fortification of bread with iodine will take effect from September 2009.

Dr Davidson is correct in stating that urinary iodine concentration (UIC) determined in a single urine sample or the urine iodide test should not be used as a diagnostic test for iodine deficiency in an individual. He is also correct in stating that the reference ranges published by WHO are for population medians and are not for individual UIC.

WHO states that adequate iodine status is indicated by a population median UIC ≥100 µg/L and that <50% of the population should have UIC below this value(12). In the CNS02, the median UIC was 66 µg/L and 77% of children had a UIC below 100 µg/L(7). It should be clear, however, that when the median UIC in a population is as low as that typically reported in New Zealand, it would be expected that the majority of the population would have individual UICs below the 100 µg/L cut-off used for populations.

The difficulty lies in trying to assess iodine deficiency in an individual, particularly in an environment of mild iodine deficiency as seen in New Zealand. Thyroid volume or goitre can be measured by ultrasonography in children but this is not practical, while TSH, T4 or T3 concentrations only change in response to moderate-severe iodine deficiency. The mean of three 24-hour urine samples collected on different days of the week over a number of weeks combined with a measurement of serum thyroglobulin (<10 µg/L) is suggested as a possible practical alternative but caution should still be used interpreting the results for an individual.
The most sensible solution for someone who believes they are iodine deficient is to increase their consumption of iodine-rich foods such as fish, sushi, eggs, and dairy products, which also contain a plethora of other good nutrients, and to ensure that if they use salt it is iodised. Hopefully the addition of iodine to bread later this year will quell the epidemic of inappropriate urine iodine testing and eliminate the iodine deficiency that is currently existent in Australia and New Zealand.

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References: