Iodine deficiency in the UK – the way forward

London meeting discusses iodine deficiency in the United Kingdom and recommends future action

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The impetus for the meeting on June 29, 2012 was the national iodine survey reported in The Lancet (1) that showed the median urinary iodine concentration (UI) in adolescent girls was 80 μg/l, indicating mild iodine deficiency, with low UI of <100 μg/l present in over two-thirds of the girls and a small number having very low levels <50 μg/l. Based on this representative survey, the UK is now among the top ten countries with low national UI medians worldwide in terms of numbers of iodine-deficient school-age children (2).

The meeting was organised by ICCIDD with the British Thyroid Association (BTA) and the British Thyroid Foundation (BTF). Participants included representatives from ICCIDD, the salt and baking industry, and medical, nutrition and public-health experts.

Professor Michael Zimmerman from Switzerland, Executive Director of ICCIDD, indicated that iodine repletion of pregnant women in areas of mild-to-moderate iodine deficiency, or replenishment of iodine stores before pregnancy, can improve maternal thyroid function and may benefit infant development. He referred to recent randomized controlled trials in children with mild-to-moderate iodine deficiency that have shown that iodine treatment significantly improves performance on tests of information processing, fine motor-skills, and visual problem-solving (3,4).

Professor Margaret Rayman (Surrey, UK) reminded the audience that the iodine contribution from food depends on the amount consumed. Although fish and eggs have the highest concentration of iodine they contribute only 11% and 5% respectively to UK iodine intake, whereas the high consumption of milk and dairy products accounts for their major contribution to iodine intake, at 38%. Winter milk has a higher iodine concentration due to supplements in winter feed. Organic milk has a 42% lower iodine content.

Dr Shiao Chan (Birmingham, UK) explained that the iodine requirement in pregnancy is greatly increased compared with the non-pregnant state and reviewed evidence suggesting that iodine supplementation preferably before conception or early in the first trimester of pregnancy reduces the risk of pregnancy loss, infant mortality, preterm delivery and neurological deficits in women with severe iodine deficiency. Direct evidence of poor obstetric outcomes in women with mild-to-moderate iodine deficiency is more limited although there is evidence of mild neurodevelopmental impairment (5).

Dr Sarah Bath (Surrey, UK) presented preliminary results from a UK study into the effect of iodine deficiency during pregnancy on offspring development (S Bath and M Rayman, unpublished data) which show that children of women deficient in iodine are more likely to have scores in the bottom quartile for total IQ, reading accuracy and mathematics.

It is remarkable that iodized salt is hardly available in the UK because the major supermarket chains do not stock it, while at the same time British salt producers sell tons of iodized salt to export markets. There are no legislative barriers; supermarkets could provide a significant public service by simply offering iodized salt.
Professor Peter Laurberg (Aalborg, Denmark) described the corrective iodine program in Denmark. In the 1990s, more than 90% of the country was affected by mild or moderate iodine deficiency leading to a high prevalence of goiter and thousands of cases of nodular hyperthyroidism each year. Following an unsuccessful voluntary programme of iodizing household and bread salt in the 1990s a mandatory program was initiated in 2000 which has brought the iodine intake into the recommended range and reduced the incidence of thyroid disease. Professor Massimo Tonacchera (Pisa, Italy) gave examples of the potential application of iodine to agricultural soils and iodine fortification of crops. However, further work is needed to develop these.

Three speakers discussed public health aspects. Parallels were drawn with the public health implications of folic acid deficiency and strategies to correct this by Dr James E Haddow (Rhode Island, USA). Mr Wouter Lox (European Salt Producers’ Association, Brussels, Belgium) commented on the significant challenges to salt producers due to the lack of an effective European public health policy regarding salt iodisation. He called for harmonised action in Europe.

In most countries, the strategy to control iodine deficiency in populations is by iodization of household, food industry or bakers’ salt. The degree of iodine deficiency prevalent in the UK could be adversely affecting pregnancy outcomes and subsequently limiting school performance. During the panel discussion chaired by the meeting’s organizer, Professor John Lazarus (Cardiff, UK), it was agreed that further monitoring of UK iodine status is essential to provide documentation of its extent and identify the prevalence of the adverse effects of iodine deficiency. The meeting concluded with the unanimous recommendation that a national strategy to correct this significant public health problem be developed.

Professor Kate Jolly (Birmingham, UK) outlined three main public health strategies for addressing iodine deficiency: population dietary supplementation, supplementation of girls and women before conception, and supplementation during pregnancy. She concluded that the evidence for an association between mild iodine deficiency and cognitive impairment is not as strong as for severe iodine deficiency, and that the initial consideration should be a trial into supplementation prior to or in early pregnancy.

References