Iodine deficiency in the UK: an overlooked cause of impaired neurodevelopment?

Friday 23rd November 2018, 1pm
Levinsky Room, ICH

Abstract
Iodine, as a component of the thyroid hormones, is crucial for brain development and is especially important during pregnancy when the brain is developing most rapidly. Though the UK has been considered iodine replete for many years, increasing evidence suggests that mild-to-moderate iodine-deficiency is now present in certain population sub-groups, most notably pregnant women. While randomised, controlled trials of pregnant women in regions of severe iodine deficiency have shown that prenatal iodine deficiency causes impaired cognition, less is known of the effects in regions of mild-to-moderate deficiency such as the UK. Using samples and data from the UK-based Avon Longitudinal Study of Parents and Children (ALSPAC), we found an association between low iodine status in early pregnancy and lower verbal IQ and reading scores in their children. Though the women in ALSPAC were recruited in the early 1990s, the results of the study are still relevant as their iodine status was similar to that reported in recent studies of UK pregnant women. Most countries get iodine from a number of sources but the UK is unusual in getting most of its iodine intake from milk and dairy products. This is because our dairy cattle receive supplements that contain iodine in the winter when they are in barns rather than grazing outdoors. Somewhat worryingly, UK sales of milk-alternative drinks (e.g. soya) have increased in recent years. Our group has shown that just three of 47 such drinks were fortified with iodine, the rest having almost no iodine content. Hence, individuals who consume these drinks in preference to cows’ milk may be at risk of iodine deficiency and may be unaware of the consequences. We are now planning a randomised, controlled trial of iodine supplementation in UK pregnant women with child cognitive outcomes at age 3 years as the primary endpoint.

Biosketch
Margaret Rayman is Professor of Nutritional Medicine at the University of Surrey, UK, and Visiting Professor at the First Affiliated Hospital, Xi’an Jiaotong University School of Medicine, Xi’an, China. In 1998, she set up the highly respected MSc Programme in Nutritional Medicine at the University of Surrey. Her research, which includes a number of randomised controlled trials, centres on the importance of trace elements to human health with particular emphasis on selenium and iodine in populations with marginal selenium or iodine status. A Thomson-Reuters Highly Cited Researcher, she has published widely on the effects of selenium on human health including a number of highly cited reviews in The Lancet. As part of her extensive work on iodine, her group found a significant association between mild-to-moderate iodine deficiency in UK pregnant women of the ALSPAC cohort and poorer IQ and reading ability in their offspring at ages 8 and 9 (Lancet 2013). She has recently been a partner in the Horizon 2020 EUthyroid project (http://euthyroid.eu/) where the effect of iodine on child neurodevelopment in cohort studies from three European countries (UK, Netherlands and Spain) was examined.