Concurrent Session 14: Iodine

Iodine deficiency in Australia a serious problem especially in children

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Background – Iodine deficiency is the most common cause of preventable brain damage in the world today especially due to irreversible effects on brain development in the fetus and early infancy (WHO 1994).
Objective – This paper present a summary of available data on iodine nutrition in Australia.
Design – A series of surveys of urine iodine excretion have been carried out in adults in Tasmania, Sydney and Melbourne (1998-2002), which reveal mean levels in the range of 60-80 µg/L (RDI 150). In pregnancy the levels were 79-109 µg/L (RDI 200). Li et al 2006, have carried out a national survey in 1709 school children (age 8-10) which revealed low mean levels in NSW (89µg/L) and Victoria (73.5 µg/L) ; marginal levels in South Australia (101.0 µg/L) ; and nearly normal levels in Queensland (136.5 µg/L) and West Australia (142.5 µg/L) ; (RDI is 150).
Outcomes – These data indicate the likelihood of impaired CNS functions in older children as observed in Europe (Holland, Spain, Italy). These studies show impaired Reaction Time and reduced IQ are more likely to occur with levels of urine iodine excretion less than 100 µg/L.
Conclusion – Recent recommendations for the adoption of mandatory bread iodization in both Australia and New Zealand have been adopted by NZ and are to be adopted by Australia. There is urgent need for promotion of iodized salt and iodized bread in order to correct iodine deficiency particularly in children and during pregnancy. In pregnancy additional iodine supplements are recommended to ensure adequate iodine nutrition. Monitoring with urine iodine measurements is required to determine whether iodine deficiency has been corrected. The WHO recommendation is that all salt for human and animal consumption (25-40 µg iodine per kilo) should be iodized to ensure an adequate iodine intake (Universal Salt Iodization - USI). This can be achieved independent of the level of salt intake.

THINKproject: does iodine improve cognition in mildly iodine-deficient children?

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Background – Iodine is essential for normal brain development and function. Intervention studies have shown improvements in the cognitive function of moderate and severely iodine deficient children, however, to our knowledge this has not been investigated in children who are mildly iodine deficient.
Objective – To determine the effect of giving a daily supplement containing 120 µg iodine or an identical placebo for 26 weeks on cognitive function in mildly iodine deficient children.
Design – A randomised, placebo-controlled, double blind study was carried out during 2007-08 on 188 intermediate-school children aged 10-13 years in Dunedin, New Zealand. An 1 mL fingerprick blood sample and spot urine sample was collected from each child. Cognition was assessed using four subtests of the Weschler Intelligence Scale for Children (WISC-IV). A semi-quantative, iodine-specific food frequency questionnaire was also administered. These measurements were conducted at baseline and will be repeated after 26 weeks.
Outcomes – At baseline the children were mildly iodine deficient (median urinary iodine concentration (MUIC) < 100 µg/L) with a MUIC of 63 µg/L (interquartile range 46-84) and mean iodine intake (SD) of 55 (23) µg/day. There were no differences between the groups with respect to MUIC, dietary iodine, and any of the subtests of the WISC-IV at baseline. To date, 82 children have completed the study; there are no significant differences between unadjusted baseline and treatment scores for three of the cognitive subtests but a significant improvement in the symbol search subtest ($P<0.001$).
Conclusions – The effect of daily iodine supplementation on cognition in the complete sample will be presented at the conference. An improvement in cognitive scores in children taking a daily iodine supplement will provide strong evidence that mild iodine deficiency impairs cognition in children.