

S02-02 Methylmercury and the fetal brain: the Faroe Islands studies

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The Faroe Islands is a population of fifty thousands in the North Atlantic. A part of the traditional marine diet consists of pilot whale meat and blubber. The meat is contaminated with methylmercury and the blubber with POPs, mainly PCB and DDE. During the last 23 years four cohorts of newborn have been followed prospectively, in total 2354 children in the age span from 0 to 23 years. A cohort of 1022 singleton births was assembled in the Faroe Islands during a 21-month period 1986-1987. The range of mercury concentrations in cord blood and maternal hair was about 1000-fold. The first detailed examination (neuropsychological, neurophysiological and neuropediatric) took place at age 7 years, i.e. just before school entry. A total of 917 of the eligible children (90%) completed the examinations. The children were re-examined at age 14, again with a similar participation rate. Clear dose-response relationships were observed for deficits in attention, language, and memory at age 7. At the age of 14, prenatal methylmercury exposure was significantly associated with deficits in finger tapping speed, reaction time and cued naming. The findings at age 7 and 14 are similar and the effects on brain function associated with prenatal methylmercury exposure therefore appear to be multi-focal and permanent. Furthermore the persistence at the age of 7 and 14 of prolonged interpeak intervals in brainstem evoked potentials indicates that some neurotoxic effects from intrauterine MeHg exposure are irreversible.

Keywords: Food contamination; Methylmercury; Prenatal exposure; Neurodevelopment; Delayed effects