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Perinatal exposure to methylmercury and PCBs in Japan

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Several epidemiological studies have reported some associations of perinatal exposures to methylmercury (MeHg) and polychlorinated biphenyls (PCBs) with neurobehavioral deficits, such as postnatal growth delay and poorer cognitive functions. These chemicals accumulate in humans mostly through the consumption of food, especially marine mammals, fish and shellfish. Since fish is rich in nutrients such as polyunsaturated fatty acids essential for normal brain development of fetuses and infants, it has been recommended for pregnant women to eat fish. Therefore, from the perspective of risk assessment, these health hazard issues are important for fish eating populations.

We have been performing a prospective cohort study to examine the effects of perinatal exposure to MeHg and PCBs on child development (Tohoku Study of Child Development: TSCD). We registered 599 mother-infant pairs between January, 2001 and September, 2003 at the obstetrical ward of two hospitals in an urban area of Tohoku district, Japan. Maternal peripheral blood, cord blood, maternal hair, and breast milk were collected for chemical analyses. For the assessment of the neurobehavioral development, the neonatal behavioural assessment scale was administered when the newborns were three days old, and other assessments including the Bayley scales for infant intelligence, the Kyoto scales of psychological development, the Fagan test for infant intelligence, and the Kaufman assessment battery for children were performed with the growth of the children.

In the present study, we report the preliminary results about the associations of the perinatal exposure to MeHg, PCBs and maternal fish intake with some indices of neurobehavioral development.