Uncertainty Exists in Recommendations for Reducing Prenatal Exposure to Mercury

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Abstract

The Environmental Working Group, Health Care Without Harm (1999) recommends that pregnant women avoid eating tuna, swordfish, or shark and that young children avoid eating more than one serving of tuna per week. Childbirth educators are in a unique position to educate women about the dangers of methylmercury exposure during pregnancy.

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Mercury exposure can happen in a variety of ways. Mercury is contained in the earth's crust. It is transformed by bacteria in aquatic environments into methylmercury and becomes part of the food chain (Myers & Davidson, 1998). Human consumption of seafood can lead to mercury exposure. In addition, water is polluted with mercury through the disposal of mercury-containing products such as thermometers and blood pressure measuring devices (Health Care Without Harm, 1999). According to the American Nurses Association, "a mercury thermometer contains enough mercury to potentially contaminate 9,000 cans of tuna fish," (1999, p.3). Mercury is also released into the air through burning waste and fossil fuels such as coal. Additionally, the largest accidental mercury poisoning occurred in Iraq between 1959 and 1972 when people ate seeds (mostly wheat) coated with a pesticide containing methylmercury (Environmental Working Group, 1999).

The greatest concern for methylmercury exposure is related to the developing fetus and young children (United States Environmental Protection Agency, 1999)

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since it crosses both the placenta and the blood-brain barrier and is neurotoxic (Myers & Davidson, 1998; Murata, Weihe, Araki, Budtz-Jorgensen, & Grandjean, 1999). While high doses of methylmercury are associated with mental retardation and cerebral palsy, lower doses are not consistently associated with adverse neurodevelopmental outcomes (Myers & Davidson, 1998). The reference dose (RfD) of 0.1ug/kgbw/day is the amount of methylmercury that "when ingested daily over a lifetime is anticipated to be without adverse health effects to humans" (U.S. EPA, 1999, p. 3). However, the fetus seems to store the lethal metal since levels of mercury are higher in fetal cord blood than in the mother's blood (Soong, Tseng, Liu, & Lin, 1991; Ong, C. N., Chia, Foo, Ong, H. Y., Tsakok, & Liouw, 1993). In addition, the sequelea may be dependent on the source of consumption (fish or whale meat). Top predators like tuna, swordfish, shark, and whale contain the highest concentrations (Health Care Without Harm, 1999; Grandjean, Weihe, Jorgensen, Clarkson, Cernichiari, & Videro, 1992). Children on the Faeroe Islands (located in the North Atlantic off the coast of Denmark) exposed prenatally to methylmercury through the maternal consumption of whale meat exhibited the following maladies: changes in brainstem function (Murata, Weihe, Araki, Budtz-Jorgensen, & Grandjean, 1999); mercury-related neuropsychological dysfunctions in the domains of language, attention, and memory (Grandjean, Weihe, White, Debes, Araki, Yokiyama, Murata, Sorensen, Dahl, & Jorgensen, 1997); and increased diastolic and systolic blood pressure (Sorensen, Jurata, Budtz-Jorgensen, Weihe, & Grandjean, 1999). However, when the Seychelles Child Development Study explored the effects of prenatal exposure through fish consumption (not whale), they found no significant delays in walking as mercury levels increased from 0 to 7 ppm (Axtell, Myers, Davidson, Choi, Cernichiari, Sloane-Reeves, Cox, Shamlaye, & Clarkson, 1998). Fish consumed by the inhabitants of the Seychelles (a group of islands located in the Indian Ocean, northeast of Madagascar) contains meth-

ylmercury concentrations similar to commercial fish in the United States (Myers & Davidson, 1998).

The scientific data is conflicting and confusing. Consequently, a conference entitled "Meeting of the Minds on Mercury" was held in November 1998 to deal with the controversy related to determining the acceptable threshold for exposure to methylmercury (Environews Forum, 1999). "It is expected that the panel comments and workshop report will significantly influence future public health policy decisions by the EPA and other agencies" (p. A12). The EPA's report to Congress in April indicated that 1% to 3% of women who are of child-bearing age eat enough fish to be at risk for methylmercury exposure (U.S. EPA, 1999). In addition, the Food and Drug Administration and state fish advisories recommend limiting the amount of contaminated fish in one's diet. Thirty-nine states and some tribes have warnings against the consumption of certain species of fish contaminated with methylmercury. Although there are many unknowns, the Environmental Working Group/Health Care Without Harm (1999) recommends that pregnant women must not eat tuna, swordfish, or shark and that young children must not eat more than one serving of tuna per week. Childbirth educators are in a unique position to educate women about the dangers of methylmercury exposure during pregnancy.

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