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Impact of prenatal and postnatal exposure to food contaminants on the risk of Parkinson's disease

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This study aims to determine whether prenatal and/or life-time exposures to methylmercury and polychlorinated biphenyls (PCBs) increase the risk of developing Parkinson's disease (PD) in the Faroe Islands, where the prevalence is about twice as high as expected. Among suspected environmental causes, exposures to methylmercury and PCBs are increased due to the tradition of eating pilot whales that bioaccumulate these neurotoxicants.

All 100 prevalent PD cases (July 2005) and 72 verified cases deceased during the previous ten years were included. Six controls for each patient were retrieved from the population registry, using the birth date and sex as matching parameters. The likelihood of prenatal methylmercury exposure was then determined from the detailed whaling records available, which allow estimation of whale meat access at household level, thus also the potential maternal methylmercury intake during pregnancy.

In addition, 79 cases were clinically examined along with two matched controls, and blood and hair samples were collected to assess current exposures to methylmercury and PCBs (only exposures during adulthood are relevant in regard to PCBs and related substances because they became important only after about 1950); questionnaires were applied to record lifetime information on residence and dietary habits.

No significant association between PD and estimated prenatal methylmercury exposure was found. Questionnaire information showed that cases had a higher consumption of blubber and whale meat in adulthood than controls, thus suggesting a positive association between lifetime PCB and methylmercury exposure and development of PD. Current blood concentration levels show more similar exposure levels, although some persistent contaminants were higher in the cases.