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Supplemental Material

Mercury Exposure and Antinuclear Antibodies among Females of Reproductive Age in the United States: NHANES

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Table S1. Association between mercury exposure and ANA positivity among females 16-49 years in the general US population (NHANES), with adjustment for polychlorinated biphenyls (PCBs).

Mercury exposure	ANA positive n (%)[a]	Crude Model[b] OR (95% CI)	Coplanar PCBs[c,d] OR (95% CI)	Prevalent PCBs[c,e] OR (95% CI)
Hair mercury (ppm)[f]				
Tertile 1 (<0.11)	13 (8)	1.00 (referent)	1.00 (referent)	1.00 (referent)
Tertile 2 (0.11-0.27)	22 (13)	1.61 (0.27, 9.64)	2.71 (0.54, 13.55)	2.65 (0.57, 12.30)
Tertile 3 (0.271-5.96)	20 (15)	1.96 (0.57, 6.77)	4.44 (1.60, 12.28)	4.03 (1.65, 9.84)
Total blood mercury (μg/L)[g]				
Quartile 1 (<0.4)	27 (9)	1.00 (referent)	1.00 (referent)	1.00 (referent)
Quartile 2 (0.4-0.8)	67 (21)	2.52 (1.16, 5.47)	2.70 (1.29, 5.67)	2.30 (1.11, 4.78)
Quartile 3 (0.9-1.5)	50 (17)	2.04 (0.95, 4.39)	2.43 (1.12, 5.27)	2.07 (0.97, 4.42)
Quartile 4 (1.6-32.8)	61 (18)	2.10 (0.98, 4.50)	2.71 (1.25, 5.86)	2.33 (1.09, 4.98)

Abbreviations: ANA, antinuclear antibody; PCBs, polychlorinated biphenyls; Hg, mercury; NHANES, National Health and Nutrition Examination Survey; OR, odds ratio.

[a]Weighted percent. [b]Models include subset with available PCB data (samples size reduced by ~6% compared to main analyses). [c]Adjusted for age, race/ethnicity, education, serum cotinine, selenium, omega-3 fatty acids, and an indicator for NHANES cycle for models combining data across cycles (1999-2004). [d]Coplanar (dioxin-like) PCB congeners included PCBs (81, 105, 118, 126, 156, 157, 167, 169); a summary measure was calculated as the sum of the products of the concentration of each serum lipid-adjusted congener and its corresponding toxic equivalency factor (TEF), which was then log-transformed. [e]The Prevalent PCB measure is the log-transformed sum of the lipid-adjusted values for the four most prevalent PCB congeners (PCBs 118, 138, 153, 180), three of which are non-coplanar and without defined TEFs to take into account. [f]NHANES 1999-2000, 1 cycle (n=424). [g]NHANES 1999-2004, 3 cycles (n=1281).

Table S2. Association between mercury exposure and ANA titer strength, among females 16-49 years in the general US population (NHANES), based on multinomial logistic regression modeling.

Mercury exposure	ANA positive n (%)[a]	Crude Model OR (95% CI)	Model A[b] OR (95% CI)	Model B[c] OR (95% CI)	Model C[d] OR (95% CI)
Hair mercury (ppm)[e]					
ANA negative (n=396)	NA	NA	NA	NA	NA
ANA 1:80-1:640 (n=32)					
Tertile 1 (<0.11)	11 (7)	1.00 (referent)	1.00 (referent)	1.00 (referent)	1.00 (referent)
Tertile 2 (0.11-0.27)	9 (2)	0.23 (0.03, 2.04)	0.23 (0.04, 1.32)	0.24 (0.04, 1.38)	0.20 (0.02, 1.64)
Tertile 3 (0.271-5.96)	12 (6)	0.82 (0.40, 1.69)	2.93 (1.22, 7.06)	2.98 (1.29, 6.90)	2.11 (0.73, 6.15)
ANA ≥1:1280 (n=24)					
Tertile 1 (<0.11)	3 (1)	1.00 (referent)	1.00 (referent)	1.00 (referent)	1.00 (referent)
Tertile 2 (0.11-0.27)	13 (11)	11.81 (0.98, 142.86)	13.74 (1.09, 172.78)	16.69 (1.63, 171.23)	14.29 (1.02, 200.25)
Tertile 3 (0.271-5.96)	8 (8)	9.47 (1.43, 62.60)	11.14 (1.53, 81.36)	11.41 (1.60, 81.23)	12.57 (1.36, 116.44)
Total blood mercury (μg/L)[f]					
ANA negative (n=1139)	NA	NA	NA	NA	NA
ANA 1:80-1:640 (n=109)					
Quartile 1 (<0.4)	20 (8)	1.00 (referent)	1.00 (referent)	1.00 (referent)	1.00 (referent)
Quartile 2 (0.4-0.8)	40 (11)	1.55 (0.66, 3.62)	1.61 (0.64, 4.10)	1.62 (0.64, 4.09)	1.63 (0.59, 4.55)
Quartile 3 (0.9-1.5)	23 (8)	1.06 (0.46, 2.42)	1.37 (0.56, 3.38)	1.39 (0.57, 3.36)	1.27 (0.45, 3.55)
Quartile 4 (1.6-32.8)	26 (6)	0.82 (0.40, 1.70)	1.10 (0.45, 2.70)	1.11 (0.46, 2.69)	1.09 (0.35, 3.41)
ANA ≥1:1280 (n=104)					
Quartile 1 (<0.4)	10 (2)	1.00 (referent)	1.00 (referent)	1.00 (referent)	1.00 (referent)
Quartile 2 (0.4-0.8)	31 (9)	4.70 (1.30, 16.98)	4.23 (1.10, 16.24)	4.20 (1.09, 16.24)	4.42 (1.15, 16.99)
Quartile 3 (0.9-1.5)	28 (8)	4.35 (1.27, 14.82)	4.21 (1.18, 15.09)	4.13 (1.15, 14.80)	4.57 (1.26, 16.60)
Quartile 4 (1.6-32.8)	35 (11)	5.91 (1.70, 20.56)	6.04 (1.59, 22.86)	5.93 (1.57, 22.47)	6.17 (1.61, 23.70)

Abbreviations: ANA, antinuclear antibody; Hg, mercury; NHANES, National Health and Nutrition Examination Survey; OR, odds ratio

[a]Weighted percent. [b]Adjusted for age, race/ethnicity, education, serum cotinine, selenium, and an indicator for NHANES cycle for multi-cycle models. [c]Model A + further adjusted for omega-3 fatty acids. [d]Model A + further adjusted for total seafood intake. [e]NHANES 1999-2000, 1 cycle (n=452). [f]NHANES 1999-2004, 3 cycles (n=1352).