

Childhood lead exposure tied to changes in adult brain structure

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(HealthDay)—Higher childhood blood lead level is associated with lower

structural brain integrity in midlife, according to a study published in the Nov. 17 issue of the *Journal of the American Medical Association*.

Aaron Reuben, from Duke University in Durham, North Carolina, and colleagues assessed the association between childhood lead exposure (measured at 11 years) and [magnetic resonance](#) imaging (MRI) measurements of lower structural integrity of the brain in midlife (age 45 years) using data from 564 participants in a New Zealand birth cohort.

The researchers found that after adjusting for covariates, each 5- $\mu\text{g}/\text{dL}$ higher childhood blood lead level was significantly associated with 1.19- cm^2 smaller cortical surface area, 0.10- cm^3 smaller hippocampal volume, lower global fractional anisotropy, and a BrainAGE index 0.77 years older. No significant associations were seen between blood lead level and log-transformed white matter hyperintensity volume or mean cortical thickness. At age 45 years, each 5- $\mu\text{g}/\text{dL}$ higher childhood [blood lead level](#) was significantly associated with a 2.07-point lower IQ score and a 0.12-point [higher score](#) on informant-rated cognitive problems, but not self-reported cognitive problems.

"We find that there are deficits and differences in the overall structure of the brain that are apparent decades after exposure," Reuben said in a statement. "And that's important because it helps us understand that people don't seem to recover fully from childhood lead exposure and may, in fact, experience greater problems over time."

More information: [Abstract/Full Text \(subscription or payment may be required\)](#)

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