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-µg/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-µg/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)