Anesthesia tied to neurocognitive impairment in childhood ALL survivors

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(HealthDay)—Multiple exposures to general anesthesia may be

associated with neurocognitive impairment and brain imaging abnormalities in long-term survivors of childhood acute lymphoblastic leukemia (ALL), according to a study published online June 20 in *JAMA Oncology*.

Pia Banerjee, Ph.D., of the St. Jude Children's Research Hospital in Memphis, Tennessee, and colleagues gathered long-term follow-up data from 212 survivors of childhood ALL, who were treated between July 7, 2000, and Nov. 3, 2010. Data were analyzed from Aug. 23, 2017, to May 3, 2018, and included information on the duration and cumulative doses of anesthetics, sedatives, analgesics, anxiolytics, and neuromuscular blockers, as well as cumulative doses of high-dose intravenous methotrexate and the number of triple intrathecal chemotherapy treatments.

The researchers found that neurocognitive impairment was linked to propofol cumulative dose (relative risk, 1.40 per 100 mg/kg; 95 percent confidence interval, 1.11 to 1.75), exposure to flurane (relative risk, 1.10 per exposure; 95 percent confidence interval, 1.01 to 1.21), and longer anesthesia duration (relative risk, 1.03 per cumulative hour; 95 percent confidence interval, 1.00 to 1.06). The investigators also found that slower processing speed was associated with higher propofol dose, more frequent exposures to fluranes, and longer duration of anesthesia. Higher corpus callosum white matter diffusivity was associated with dose of propofol and duration of anesthesia, and processing speed was significantly correlated with corpus callosum diffusivity.

"The findings from our study suggest that long-term survivors of childhood ALL experience significant neurocognitive impairment and abnormal white matter integrity related to exposure to propofol, fluranes, and longer anesthesia duration," the authors write. "Clinically, efforts should be made to limit the use of general anesthesia, particularly propofol and fluranes, when feasible alternatives exist for providing

sufficient pain control and sedation."

More information: Abstract/Full Text (subscription or payment may be required)