Medical Xpress

Delirium in older patients after surgery may lead to long-term cognitive decline

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Researchers from the Harvard Medical School - affiliated Hebrew SeniorLife Institute for Aging Research (IFAR) have found increasing evidence that delirium in older surgical patients may be associated with long-term cognitive decline. Findings from the study were published today in the July 2016 issue of *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*.

Delirium is a common, serious, often fatal disorder affecting as many as 50% of older people during the course of surgery or hospitalization and costs more than $164 billion per year. However, until now, the relationship between delirium and long-term cognitive decline has not been well-explored. The Hebrew SeniorLife IFAR study, conducted in collaboration with Beth Israel Deaconess Medical Center, Brown University, and Northeastern University examined the trajectory of short-term and long-term cognitive decline in patients who experienced delirium for 36 months following a surgery.

Delirium occurred in 134 of the original 560 participants in the study. Both groups of participants, those who experienced delirium and those who did not, showed a significant cognitive decline at one month, followed by a recovery above baseline at two months and then a gradual decline for the next 34 months. The 560 participants in the study were aged 70 years or older, had no previous signs of dementia, and were scheduled to undergo surgery with an anticipated length stay in the hospital of three days or greater.

The delirium group, however, had a significantly greater decline at one month compared to those without delirium. Although they too recovered at two months, this group had a more significant decline after the two-month mark than the non-delirium group. Beyond two months, both groups declined on average, but the delirium group declined significantly more. When researchers compared changes from baseline to 36 months, there was no significant change for the group who did not experience delirium, but a marked decline for those who did.

According to the researchers, the fact that both the delirium and non-delirium groups suffered cognitive decline at month one, and then a return to baseline at month two, likely represents the immediate impact of events such as anesthesia, surgery, and hospitalization. However, the higher rate of cognitive decline after month one for those with delirium suggests that delirium may set off a cascade of events which leads to progressive, long-lasting effects. Or, it is alternatively possible that delirium is associated with a pre-existing higher rate of cognitive decline that is not detectable at baseline. In either case, delirium may serve as a marker for seniors with poor cognitive reserve.

"This study is highly significant in demonstrating that delirium is associated with subsequent long-term cognitive decline at a pace similar to that of mild cognitive impairment, even in those with normal cognitive function at baseline," says Sharon K. Inouye, M.D., M.P.H., Director of the Aging Brain Center at the Institute for Aging Research, Hebrew SeniorLife, a faculty member in the Division of Gerontology at Beth Israel Deaconess Medical Center, and Professor of Medicine at Harvard Medical School. "Whether or not delirium is causative, it identifies those at risk for subsequent cognitive decline and warrants both close clinical follow-up and preventive interventions."

A total of 560 participants underwent a baseline assessment and medical review 30 days before surgery to ascertain their normal cognitive status.

After surgery, participants were regularly assessed for up to 36 months. The delirium assessment during hospitalization included brief cognitive testing and interviews with family and nurses conducted daily. Delirium was rated using a standardized approach with high sensitivity. Cognitive performance was assessed using a comprehensive neuropsychological test battery which was administered before surgery and with each follow-up.

More information: Sharon K. Inouye et al, The short-term and long-term relationship between delirium and cognitive trajectory in older surgical patients, *Alzheimer's & Dementia* (2016). DOI: 10.1016/j.jalz.2016.03.005

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