Strong Link Seen Between Depression, Inflammation

BY DAMIAN McNAMARA
Miami, Fla

SAN DIEGO—Increased levels of C-reactive protein and other markers of perioperative inflammatory response are associated with perioperative neurocognitive decline following cardiac surgery, Dr. Basel Ramlaoui said at a congress sponsored by the Association for Academic Surgery and the Society of University Surgeons.

Dr. Ramlaoui and his associates prospectively evaluated 41 patients who underwent coronary artery bypass graft and/or valve procedures that used cardiopulmonary bypass. The patients’ mean age was 67 years. All patients had neurocognitive testing preoperatively, postoperatively at day 4, and at 3 months. The validated tests took 45 minutes and included covered measures of executive function, naming, attention, fluency, and premorbid intelligence, said Dr. Ramlaoui of the division of cardiothoracic surgery at the Harvard Medical School, Boston.

Neurocognitive decline was defined as performing one standard deviation from baseline on at least 25% of tasks.

Participants also underwent serum testing preoperatively, postoperatively at 6 hours, and at 4 days. Levels of C-reactive protein (CRP) and of interleukin 1β, IL-6, and IL-10 were assessed, and an increase of serum tau protein after surgery was also associated with an increase of CRP.

Of the 41 patients, 7 (17%) developed neurocognitive decline. Baseline characteristics and predictors of neurocognitive decline such as age, education level, and perioperative temperature did not differ significantly between patients with and without postoperative neurocognitive decline.

However, patients who experienced postoperative neurocognitive decline had significantly greater increases of CRP IL-1β, IL-6, and IL-10 than those who had no decline in the perioperative period.

In addition, the level of tau protein was increased 78% in patients with neurocognitive decline, compared with 29% in their counterparts who did not show a decline.

“There exists a significant association between the magnitude and persistence of the perioperative inflammatory response and neurocognitive decline in this cohort,” Dr. Ramlaoui said. “This association is likely mediated by axonal damage.”

According to the medical literature, the incidence of neurocognitive decline is 20% to 40% for patients undergoing coronary artery bypass surgery. “It can range from 5% to 40% for periods up to 5 years after surgery,” he said, adding that the etiology of this complication is not known.

“It is likely a multifactorial problem,” Dr. Ramlaoui said. “Several theories have been assessed. The most obvious one is ischemia. Any microemboli might cause this.”

Other possible factors include anesthesia, perioperative hypothermia, and low level of education.

“While there have been certain markers of brain injury following cardiopulmonary bypass, very few have been associated with clinical outcomes and neurocognitive decline,” he said. “Tau protein, on the other hand, assesses axonal damage and has not been studied in cardiac surgery before.”

Postoperative Neurocognitive Dip Tied To High Inflammatory Markers

San Diego — Increased levels of C-reactive protein and other markers of perioperative inflammatory response are associated with perioperative neurocognitive decline following cardiac surgery, Dr. Basel Ramlaoui said at a congress sponsored by the Association for Academic Surgery and the Society of University Surgeons.

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Rape Associated With Increases in Headaches, Pain, GI Disorders

San Francisco — Rape appears to initiate a host of neuroinflammatory changes that could predispose the victim to later inflammatory disease, Maureen Groer, Ph.D., said at the annual meeting of the Society of Behavioral Medicine.

“Victims of rape experience more headaches, chronic pain, gastrointestinal disorders, breast cancer, and arthritis—many of which have an inflammatory component,” said Dr. Groer, a registered nurse at the University of South Florida, Tampa. “About a third of them also develop posttraumatic stress disorder which is also associated with an increase in inflammatory disorders.”

“I would suggest that this could be explained by psychoneuroimmunology, in which stressors appear to provoke an immune response that can lead to damage of normal tissues if it is prolonged.”

To examine the relationship between rape and inflammatory response, Dr. Groer compared lymphocyte subsets and cytokine and hormone levels in a group of 16 healthy control women who had low self-reported stress with those in a group of 15 victims of recent rape. Blood was collected from the rape victims within 72 hours of their assault (within 24 hours) and the rape victims’ mean age was 30 years; that of the control group was 24 years. None of the women were living in domestic abuse or violent situations.

Serum analysis revealed that levels of CD8 cytotoxic cells were significantly higher in rape victims than in controls (10% vs. 6%), and CD19 percentages were significantly lower in rape victims compared with controls (6% vs. 20%).

Compared with controls, rape victims also expressed much higher levels of interleukin-γ (10 times higher), interleukin-10 (four times higher), interleukin-6 (five times higher), and C-reactive protein (three times higher). These data suggest an acute inflammatory process.

Nurses who examined the rape victims also noted victims’ behavior as controlled (quiet and withdrawn) or uncontrolled (angry or lashing out). Most of the victims were controlled, control correlated with lower CD4 counts, reduced CD4/CD8 ratios, and lower inflammation.

“This suggests a state of T-cell suppression,” Dr. Groer said. “The inflammatory response system may dominate and deplete the adaptive reserves of the women and provoke a pathophysiological state leading to multiple adverse health outcomes.”

—Michele G. Sullivan