

Cancer Advances: Chemotherapy Impacts Cognitive Functioning

From the January 15, 2002 issue of the *Journal of Clinical Oncology*. According to a new study by researchers at the Dartmouth-Hitchcock Medical Center, standard-dose chemotherapy can negatively impact the cognitive functioning of cancer survivors up to 10 years after treatment. Cognitive functioning is associated with mental abilities, such as judgment, memory, learning, comprehension, and reasoning. In recent years, a growing body of research has supported the theory that cancer survivors experience problems with cognitive function following certain types of treatment. Earlier studies have suggested that cancer survivors treated with chemotherapy experience cognitive problems in the short-term after treatment and up to two years following treatment. This study - the first of its kind to compare the cognitive effects of chemotherapy and radiation therapy on long-term cancer survivors - determined that people treated with chemotherapy scored significantly lower on tests for memory, concentration, and psychomotor functioning (ability to integrate different types of information) than patients who received only radiation therapy or surgery. "We wanted to study long-term cancer survivors to see if the secondary effects of chemotherapy on cognitive functioning could be detected many years after treatment and our results suggest that they can," said Tim A. Ahles, Ph.D., lead study author, and Professor of Psychiatry and Program Director of the Center for Psycho-Oncology Research at the Dartmouth-Hitchcock Medical Center. "The cognitive effects of chemotherapy on patients were relatively subtle and most of the scores fell within the normal range of performance. However, patients tell their physicians that these changes are very recognizable." The 128-person study compared breast cancer and lymphoma survivors treated with chemotherapy (35 breast cancer patients, 36 lymphoma patients) with people who received only radiation therapy or surgery (35 breast cancer patients, 22 lymphoma patients). Study participants were at least five years post-diagnosis, not presently receiving cancer treatment, and disease-free. Patients were given a standard neuropsychological assessment in nine areas including verbal ability, visual and verbal memory, and psychomotor functioning. Participants also completed questionnaires on anxiety, fatigue, depression, and memory functions. Results reveal that 85 percent of study participants received only one type of chemotherapy regimen. Survivors who were treated with chemotherapy scored significantly lower on the neuropsychological assessment compared to those treated with only radiation therapy or surgery across multiple areas, particularly in verbal memory and psychomotor functioning. However, these results, as well as those of other studies, suggest that only a subgroup of patients experience persistent cognitive deficits post-treatment. Reports of depression, anxiety, and fatigue, all of which can affect cognitive functioning, did not differ between the groups. This suggests that the differences in performance on the cognitive tests were due to the chemotherapy itself, not to greater levels of depression, anxiety, and fatigue in patients who received chemotherapy. **What does this mean for patients?** At this point, there are no known treatments for the cognitive deficits experienced by some cancer survivors who receive chemotherapy. Dr. Ahles encourages cancer survivors to talk to their physicians about any changes they experience in cognitive functioning, including problems with memory, concentration, and psychomotor functioning. Although chemotherapy may be the cause of cognitive changes, there are many other, more treatable causes of cognitive difficulties such as medications, depression, anxiety, and fatigue. Studies are currently underway to try to identify types of treatments or cognitive rehabilitation that might help cancer survivors.