

Behavior – A Sixth Vital Sign in Cancer Patients

Behavior is emerging as a “sixth vital sign” for gauging the health and well-being of cancer patients and survivors.

A growing body of research literature is uncovering the complex, multi-layered link between behavior and cancer progression and recovery.

Researchers affiliated with the Cousins Center for Psychoneuroimmunology and Jonsson Comprehensive Cancer Center at UCLA are among those at the forefront of understanding how cancer and its treatments influence behavior, and how behavior influences the disease.

“Depression, fatigue, sleep disturbances and cognitive dysfunction brought on by complications of cancer and the toxicity of some treatments can plague cancer patients from diagnosis through recovery and beyond,” reports Dr. Michael Irwin, UCLA professor of psychiatry and biobehavioral sciences.

“Biobehavioral assessment of the causes and impact of these symptoms is yielding a wealth of new strategies for combating the progression of some cancers and for improving the quality of life of the more than 10 million cancer survivors in the United States,” Irwin said.

Peer support for survivors

Persistent, debilitating fatigue is a common complaint among cancer survivors. Annette L. Stanton, UCLA professor of psychology and of psychiatry and biobehavioral sciences, and colleagues recently conducted a study of biobehavioral influences on cancer patient fatigue and disease-related distress during the critical transition from patient to survivor, also called re-entry.

Reporting in the September 2005 *Journal of Clinical Oncology*, Stanton’s team found that a peer-modeling videotape developed for the project significantly accelerated recovery of energy during the re-entry phase, particularly among women who feel less prepared for re-entry. The video is now available through the National Cancer

Information Service and its impact will be examined further in future research.

“I am really encouraged that our intervention actually has immediate clinical applicability, and we’re working to strengthen that intervention,” said Stanton.

Her current work also includes an examination of behavior and neuroendocrine function in women with metastatic breast cancer and a study of psychological well-being and immune function in women who have been tested for the breast cancer gene.

Stress and tumor growth

Steve Cole, UCLA professor of medicine in the Division of Hematology/Oncology, specializes in development of computer algorithms used to pinpoint signaling pathways that affect specific cellular behavior. “We are currently applying these techniques to understanding how psychological factors and the social environment affect the biology of cancer cells,” he said.

Cole co-authored a study published in the August 2006 edition of *Nature Medicine* that examined the impact of stress on mice implanted with ovarian cancer cells. In addition to finding that tumors in mice under stress grew and spread faster, the study pinpointed a specific receptor on the surface of a cancer cell that allowed a stress hormone to accelerate the growth of blood vessels that support the tumor and help it to spread.

Immunity factors

Reporting in the May 1, 2006, edition of *Clinical Cancer Research*, Irwin reported that breast-cancer survivors with persistent fatigue had increased levels of interleukin-6, a protein produced by immune cells to increase disease-fighting inflammatory reactions.

“Our findings not only help explain their fatigue but indicate potential targets for dealing with the debilitating fatigue experienced by so many cancer survivors,” he said.

Irwin also recently received a grant from the National Cancer Institute to examine the impact of tai chi on chronic insomnia and immune mechanisms in breast cancer survivors.

Yoga therapy

Julienne Bower, assistant professor of psychology and psychiatry and biobehavioral sciences at UCLA, recently received a National Center

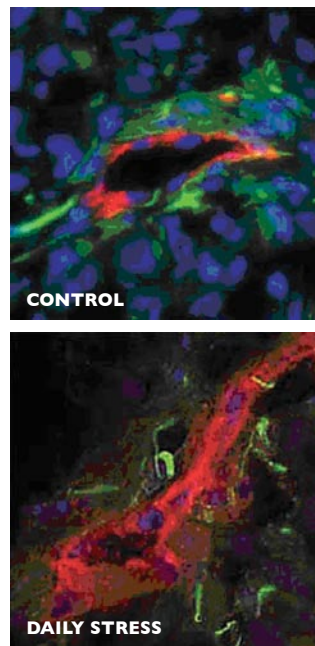
for Complementary and Alternative Medicine grant to conduct the first randomized, controlled clinical trial of yoga for fatigue among breast cancer survivors.

“We are interested in yoga because we have compelling preliminary data that suggest the practice may be associated with improving mood and energy,” Bower said. “Yoga also has been found to be helpful in easing symptoms related to multiple sclerosis and other disorders.”

Bower also is examining the impact of positive outcomes of stressful experiences such as cancer. “Many cancer patients report positive changes in self-concept and shifts in priorities, goals and relationships,” she said.

“We are hoping to identify physiological factors that

contribute to this experience and the possible implications on physical health.” •



Chronic stress leads to increases in the formation of blood vessels around tumors (as shown by the red staining), which increases tumor growth and risk of metastases.

Thakker, P.H., et al. Chronic stress promotes tumor growth and angiogenesis in a mouse model of ovarian carcinoma. *Nat Med* 12, 939-944, 2006.