Nutrition integral to cancer treatment

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Nutrition is a fundamental part of cancer treatment and physicians need to be concerned if a cancer patient loses weight, complains of appetite loss or develops anorexia, an international expert has cautioned.

The above symptoms could be indicative of cancer-related cachexia, which is a major risk factor for poorer outcomes including higher morbidity and mortality and increased toxicity to chemotherapy, said Dr. Maria Isabel Correia, professor in the department of surgery at the Federal University of Minas Gerais Medical School, Minas Gerais, Brazil.

Patients with solid tumors show the greatest incidence of weight loss, with one-third of all cancer patients losing more than 5 percent of their original body weight. And up to 20 percent of all cancer deaths are caused directly by cancer cachexia.

The condition is the result of a release of proteolysis-inducing factor into the bloodstream, leading to an increase in protein breakdown and loss of muscle or lean body mass. Immune system’s response to tumors can be the other reason.

Cytokines are released in response to the local and systemic tumor invasion, causing loss of appetite and decreased food intake. The levels of cytokines such as interleukin-6 and C-reactive protein are elevated in cachectic patients.

The side effects of cancer treatment itself can also cause weight loss and impair nutritional status, playing havoc with the patient’s health that’s already compromised by the cancer onslaught.

Unfortunately physicians, including oncologists, are not very well attuned to nutritional issues. Oncologists usually have to see too many patients in a short period of time. Sometimes they might not even get to talk to the patient, let alone advise them about the right nutritional support. They look at the patient’s chart, prescribe medications and pass them onto to the nurse or psychologist to take care of them, said Correia who was recently hosted in Singapore by Abbot Nutrition.

“And we physicians are not educated about nutrition. Those among us who have some knowledge either don’t value it as a part of the treatment or hope that somebody else will take care of that,” she said.

As a result, the nutritional needs of cancer patients can get ignored. According to Correia, while a holistic approach is fundamental to the success of the treatment, it needs to be individualized not only according to the patient’s nutritional status, but also according to the different phases of cancer treatment.

Ongoing tailored nutritional support by a nutritionist is crucial, a specially formulated supplement containing energy, protein and the anti-inflammatory EPA becomes necessary when a patient is not reaching at least 80 percent of his or her nutritional requirements through regular meals alone, said Correia.

Biofilm imaging faculty hopes to unlock bacterial secrets

Professor Yehuda Cohen, deputy director of SCELSE, explaining advance research technologies in advanced life sciences engineering using ZEISS microscopes.

T he most valuable imaging faculty recently opened at the Singapore Centre on Environmental Life Sciences Engineering (SCELSE), in partnership with Carl Zeiss, hopes to further the understanding of bacterial interactions in different environments.

Single-celled organisms were perceived to be sootial until recently. But new research has revealed that when bacteria are under stress, they huddle together to form colonies shielded in biofilms that have a very complicated architecture.

Biofilms are responsible for persistent bacterial infections, including those associated with cystic fibrosis, infections of the urinary tract and the colonization of contact lenses, artificial heart valves and joint prostheses. Some external biofilms, such as chronic wounds and dental plaque, can be manually removed. But accessibility and increased resistance to antibiotics make internal biofilms more difficult to eradicate.

Also, the bacterial colonies behave differently in various environments and from individual bacterium. While the latter have been extensively studied and understood, little is known about the biofilm structures and what seems to be a highly evolved inter-and intra-species communication systems, said Professor Yehuda Cohen, deputy director of SCELSE.

Understanding the structure and the communication system will help scientists devise ways to inhibit the process of biofilm’s development or destroy the structures, said Cohen.

In addition to public health applications, the bacterial research employing Carl Zeiss high-resolution, high-sensitivity laser scanning confocal systems will be used in water treatment and environmental life sciences engineering research that SCELSE is already engaged in.

The new facility is the first one where Carl Zeiss is allowing customization of their imaging equipment to suit the research needs. In its long history, the optical and opto-electronic leader has always sold its equipment as is. The facility’s $66.5 million value represents funding by SCELSE, office space and support by NTU and in-kind support from Carl Zeiss.