

IN EVERY ISSUE

## Message from the Editor

BY DEBU TRIPATHY, MD

*Confronting tumor evolution with treatment revolution.*

Over the centuries, both infections and cancers were appropriately treated as foreign growths, but with extremely limited tools such as arsenic and mercury. As we have grown to understand the nature of bacteria and viruses, it has been much easier to find therapeutic targets because of the vast differences between microorganisms and human cells.

Most bacterial infections are treated quite effectively today, but malignant cells are very similar to normal cells, and therein lies the difficulty in developing therapies that kill the cancer and spare the patient. Furthermore, cancer cells can mutate their DNA more rapidly than normal cells, and can evolve over time to develop resistance to therapy.

The basic principles of cancer therapy are quite simple—remove as much of the cancer as possible by physical means, such as surgery or radiation, and then use drugs that affect the inner workings of cancer cells while leaving normal cells unharmed. The real revolution in cancer therapy has been in the details of how to accomplish these tasks efficiently and effectively, outsmarting the acquired (in some cases inherited) and evolutionary growth advantages of cancer cells.

As simple as these principles are, the required expertise comes from different disciplines, including surgery, radiation, and medical oncology, while the diagnosis and monitoring of patients require input from pathologists and radiologists. Each of these fields has advanced dramatically, contributing to more patients being cured and living longer with fewer side effects.

A patient with breast cancer, for example, may now have cancer detected at an earlier stage with MRI (this is indicated in patients with a genetic predisposition), therefore improving curability. The surgeon can use newer techniques like sentinel node biopsy to minimize the amount of surgery and make post-operative complications such as lymphedema (swelling of the arm) a rarer event.

The pathologist is now able to employ sophisticated protein- and gene-based tests to help decide which drug, if any, will be helpful after surgery to minimize

the risk of recurrence. Medical oncologists are armed with new drugs such as Herceptin to cut the recurrence risk of HER2-positive breast cancer by as much as half—over and above what chemotherapy can achieve. Radiation can further lower recurrence risk with fewer side effects when given precisely over the affected area and in less time using accelerated approaches. Effects on bone health and other areas are being increasingly understood and addressed.

You will read about many of the key advances in the different modalities of cancer care in this special issue. Multidisciplinary communication and coordination of care are now becoming the norm, from large academic medical centers to community practices across the country. As a medical oncologist specializing in breast cancer, I could not envision caring for patients without my readily available colleagues from other specialties who share their talents and experience to compose a tailored and state-of-the-art plan aimed at the best possible outcome.

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Editor-in-chief