PERSONALIZED CANCER THERAPY HAS ARRIVED

By Daniel J. Dunphy, ND, PA-C

The long-awaited era of personalized genetic medicine is finally dawning for people with cancer. A little-known reality of current "standard of care" in oncology is that genetic analysis of a person's individual cancer is an effective, but unusual, method of cancer treatment.

Having researched cancer testing for the last five years both in Europe and the US, the author would like to share his insights with fellow health-care practitioners. At present, a European lab offers a blood test that filters and isolates circulating tumor cells (a.k.a. micrometastatic cells) from a patient's blood, genetically fingerprints them, then pharmacogenetically tests the cells for the effectiveness of various medical therapies.

Therapies tested include traditional medical chemotherapeutic agents and new-generation targeted therapies, such as monoclonal antibodies and tyrosine kinase inhibitors, hormone blocking therapies, and an array of over forty nutrient, biological, and herbal therapies. The results not only help the practitioner and patient choose an effective combination of therapies, but also helps them understand which cancer genes (oncogenes) are blocked by which treatments. It is important to block the activity of multiple genes to successfully regulate cancer expression because single therapies are extremely rare in cancer care, as they often allow the cancer genome to adapt and become more aggressive.

Genetic tumor analysis is also available. Ideally, a frozen tumor sample is preserved at the time of biopsy. The sample can then be used for oncogene analysis, as well as creating an autologous (made from the patient's own tissue) vaccine. A growing number of labs in the United States and abroad offer this level of testing. However, only a few places worldwide provide autologous vaccine development. With regards to cancer care, it often pays to think and to act outside of the box.

A relatively new blood test is available in the US, called CellSearch® Circulating Tumour Cell Test (Tel: +1 303 933-9785). This simple, accurate, and underused blood test has been approved by the Food and Drug Administration since 2008 for breast, colon, ovarian, and prostate cancers. There is no good scientific argument against use of the test in all adenomas, sarcomas, and squamous cell cancers where circulating tumor cells are commonly found in the blood and their quantity provides an accurate measure for potential cancer reoccurrence. Circulating tumor cells are filtered from a patient's blood sample. The sum of these cells gives a statistical probability of metastasis for colon, breast, prostate, and ovarian adenocarcinomas and can be monitored over time to catch increases in potential cancer expression without waiting for another mass to show.

One of the major labs that provide individual genetic analysis is Research Genetic Cancer Centre Labs in Greece (*http://www.rgcc-genlab.com*). I am unaware of any lab in the States doing this full multi-level analysis of micrometastatic cells. The cost of the RGCC test is about Euro 1950, 2500 USD. Return time is two weeks. Treating a cancer without oncogenetic (cancer gene) analysis is like trying to tell where a ship is coming from when it is thirty miles from the shore, without a telescope. You know the ship is there, but where it's actually coming from and whether it's friendly or hostile are complete guesses. Individual oncogene analysis provides the appropriate quantum of analysis to pinpoint a cancer patient's specific needs for care. The goal is to gather as much data as possible before therapies are selected. If a patient is treated with a wrong or inadequate therapy, the cancer will grow more aggressive in time. Similarly, trying to annihilate the cancer often annihilates the patient in the process, whereas containing the cancer over time usually allows the patient to live longer and enjoy a good quality of life, in spite of the cancer. Think about how a bacterial infection is treated. If a doctor treats a systemic infection without first doing a culture and sensitivity test to determine which bacteria is involved and which antibiotics the bacteria is sensitive to, then he might prescribe the wrong treatment and thereby strengthen the infection. It is the same for the treatment and regulation of cancer.

Cancer can be viewed as a genetic organism with specific needs, strengths, and weaknesses. It has an archaic metabolism similar to yeast, growing rapidly in low-oxygen environments, and making only two ATP energy molecules from a molecule of sugar, then throwing off waste that creates a moat of toxicity and protects the cancer cells from the body's defenses. In normal cells in the body, one molecule of glucose sugar is made into 37 ATP energy molecules. This is an oxygen-based, highly-efficient process, unlike cancer-cell metabolism. Cancer cells thrive where other cells suffer. A tumor is highly inefficient and dies as fast as, if not faster then, it can grow; therefore it must seed itself in other areas of the body to survive. It is a stealth-like, parasitic organism that, unlike most evolutionary life forms, has evolved to thrive on inefficiency. It is important to understand that cancer is a systemic illness and that a tumor is not the cancer but only a manifestation of it.

Cancer is a disease that occurs at the level of the genes. While arguably an environmental illness, it occurs in individuals; as such, individual genetic analysis is a more precise tool to develop successful treatments for our patients. Today's "standard of care" for cancer is simply unacceptable, given the advances in biological sciences. It is all too often a "standard of carelessness." HFN

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CDC study direly predicts that 1/3rd of U.S. adults will develop diabetes by the year 2050. *November 16, 2010*