

## Prostate Health

# Prostate Health

by Jeannine Lee

Prostate cancer is probably the worst fear among aging men. But like all cancers great strides have been made in recent years toward early detection and reducing its impact.

The PSA (prostate-specific antigen) test has contributed significantly to the early detection and prevention of prostate cancer but it has its drawbacks: it is unable to identify men at risk before the onset of the disease. Cancer, including prostate cancer, is a gradual step-wise process that may unfold over decades, not necessarily in a single identifiable event. **There are biological markers along the way that can alert us to the predisposition for all cancers.** This article will cover many of them.

The formation of cancer cells usually involves the accumulation of injuries over time at several different biological levels. They involve both biochemical and genetic changes to the cell. At each of these levels there is a chance to intervene - that is, to slow, prevent, or even stop the process of cancer cell formation. **Why wait for the onset of the disease when it is possible to read the clues and implement corrective measures far ahead of that time?** Isn't it time we put our efforts toward the beginning and preventative phase of the disease rather than its terminal stages?

## The Biological Markers

Biomarkers are physiological manifestations of change that occur on the pathway to cancer. It is possible to use molecular techniques to uncover critical pre-cancerous events taking place inside the body and to identify the biological flags that alert us to their presence, such as:

- DNA damage
- DNA repair system
- Cell mitosis/apoptosis
- Gene activation
- Levels of antioxidants
- Efficient immune function.

Each of these are biological clues indicating that the body has been assaulted by toxic or cancer-causing agents. The detection of precancerous damage in the body allows for early intervention in the disease's development.

## Early Detection Markers:

## **Growth Factor-1 (IGF-1) in the blood:**

IGF-1 is a peptide which mediates the actions of growth hormones. It stimulates the growth of both cancerous and normal prostate cells. In a research study of 15,000 men, and published in 'Science' in 1998, it was revealed that even though the IGF-1 level was elevated in most of the men, the PSA levels remained normal until 7 years later when cancer was diagnosed. In other words, cancer's presence took an additional 7 years to show up on a PSA test than what the IGF-1 marker revealed. Elevated IGF-1 levels may warrant attention.

## **Comparing Free PSA with Bound PSA:**

The ratio between free PSA to bound PSA helps to make a distinction between benign prostate hyperplasia (BPH), and untreated prostate cancer in men with PSA in the 4-10 ug/L range. If free PSA is between 0 and 10% the probability of cancer is high, if between 10-25% the probability is moderate, and if it is greater than 25% there is low probability. The calculation of free to bound PSA is crucial for the differentiation between prostatitis, BPH and prostate cancer.

## **Cell Death:**

Cell death (apoptosis) and cell proliferation (mitosis) are at the core of tissue development, cell differentiation, homeostasis and aging, and are affected by diet, nutrition, lifestyle and other environmental factors. Balance between the two processes can be disrupted. During vital or chemical exposure the number of cells undergoing apoptosis increases. As the cell loses functional tumor-suppressor genes, the cell's ability to undergo apoptosis decreases which allows the population of tumor cells to grow.

## **Natural Killer (NK) Cell Activity:**

The natural Killer Cell (NK) is one of the most important lymphocytes in our body. At the heart of our immune system, it has the ability to defend us against a variety of diseases. Abnormal or reduced natural immunity, as measured by decreased NK activity, has been linked to the development and progression of cancer. Low NK cell activity due to stress or antioxidant deficiencies may contribute further to the mitosis/apoptosis imbalance increasing additional tumor cell growth. It is important to reliably detect abnormalities in NK cell function.

## **Levels of Antioxidants:**

Some drugs and antioxidants can lower IGF-1 levels. One such molecule is lycopene, the major antioxidant found in tomatoes. Lycopene suppresses IGF-1, has shown to inhibit chemically-induced tumors in rats, inhibits spontaneous mammary tumor development in mice, possesses anti-proliferative properties against mammary endometrial, lung, and transformed liver cancer cells, and enhances immune responses. Lycopene is very friendly to the tissues of the prostate.

Low serum levels of lycopene have been observed in patients who developed prostate, bladder and pancreatic cancer. Measuring and correcting serum and cellular levels of lycopene may do a lot toward cancer prevention.

## **Late Detection Markers**

A late tumor marker is any substance that can be related to the presence or progress of a tumor. Tumor cells have been known to emit a tumor marker in plasma. These markers may be unique to the malignant cell, or may simply be expressed in greater amounts than what is present in healthy cells. Tumor markers fall into three basic categories:

- Hormones - human chorionic gonadotropin (HCG) secreted by choriocarcinoma
- Enzymes - prostatic acid phosphatase in prostate carcinoma
- Tumor antigens - carcinoembryonic antigen CEA in colorectal carcinoma

### **Late Detection Tests for various types of cancers:**

These tests are for screening various types of cancers. They are provided here for your information.

#### **Alpha-Fetoprotein, Human Cord Serum (hAFP)**

A useful marker for liver tumors. Higher Levels are also reported in gastric cancers.

#### **Cancer-associated Antigen, Ovarian Tumor (CA 125)**

A powerful prognostic indicator for patients with advanced breast and ovarian cancer. Highly useful in monitoring bone metastasis in patients with breast and ovarian cancer.

#### **Cancer-associated Antigen, Breast Tumor (CA 15-3)**

A powerful prognostic indicator for patients with advanced breast cancer. Highly useful in monitoring bone metastasis in patients with breast cancer.

#### **Cancer-associated Antigen, Gastrointestinal (CA 19-9)**

A glycoprotein elevated in serum of individuals with colorectal, gastric and pancreatic cancer.

#### **Carcinoembryonic Antigen (CEA)**

Increased levels of CEA have been observed in more than 30% of patients with cancer of the lung, liver, pancreas, breast, colon, head or neck, cervix and prostate.

#### **Cancer-associated Antigen (TAG-72 (CA 72-4)**

A complex glycoprotein that is elevated in individuals with breast, pancreatic, ovarian, colon and stomach cancer. One of the most specific and sensitive markers for monitoring gastric cancers.

### **Neuron-specific Enolase (NSE)**

A useful tumor marker for monitoring treatment of patients with small cell lung cancer. Detects recurrent disease and metastatic spread long before other diagnostic methods.

### **S-100 Protein**

A valuable tool for detecting post-extra corporeal circulation brain damage. Demonstrated to be an effective marker for malignant melanoma metastasis.

### **Tissue Polypeptide, Human Breast Epithelium Carcinoma Cell Line (hTPA)**

Higher levels of this marker have been reported in gastrointestinal, gynecological, lung and bladder cancers, and shows significant correlation with other factors such as clinical stage, tumor size and distant metastasis. Is considered a good marker for pancreatic malignancy.

## **Summary:**

It has been estimated that 75% of all cancers are due to environmental factors, i.e. by exposure to toxic chemicals. Only 2 to 3% at most of the current cancer burden is attributed to genetic factors. The detoxification of the chemical load, diet, and nutrition are major players in cancer prevention. Since cancer is a chronic condition that develops over time **prevention is a lifelong endeavor.**

Contrary to the drama surrounding cancer, it is not a disease that falls out of the sky upon you. Thanks to modern medicine and diagnostic techniques there are a number of ways to see it coming. You can take a pro-active approach to the prevention of this disease and increase your overall health picture as you do.

For additional information on the nutritional prevention of some cancers, see [Top Ten Anti-Cancer Compounds](#) by Jesse Stoff M.D. (Some portions of this article were taken from writings by Dr. Stoff. Used by permission.)