

Tumor Markers

What are tumor markers?

When diagnosing cancer, blood and pieces of tumor (called tissue) must be examined under a microscope. The tests done on tissue samples, called prognostic markers, will determine the characteristics of the tumor, such as aggressiveness, rate of growth and degree of abnormality. Blood may contain substances called tumor markers, which are produced by tumor cells. These markers may be proteins, antigens, or hormones.

Some tumor markers are very specific, meaning they are produced almost exclusively by a particular tumor. When they are detected in the blood, the doctor can be fairly certain that they have been produced by that tumor. Both normal cells and tumor cells make other tumor markers. The presence of these markers may be less helpful to the doctor.

A tumor marker is considered sensitive if it can be detected when there is only a small tumor present, and if it increases as the tumor grows. Markers are less sensitive if a large number of cancer cells are required before presence can be detected in the blood. Sensitive markers are more helpful, because they can help the doctor follow the progress of the tumor.

Ideal tumor markers are both highly sensitive and specific. At present, most tumor markers have either one characteristic or the other. That is, they are either very specific or highly sensitive.

If your tumor produces a marker, your doctor will have your blood tested at intervals to help evaluate your response to treatment. Changes in markers will be evaluated in combination with a physical exam, X-rays and scans to determine the effectiveness of your treatment.

What are the common tumor markers?

Prostate-Specific Antigen (PSA): This is an antigen, which seems to be an accurate indicator of the presence of prostate tumor cells. It may also be elevated in prostatitis or following a prostate exam.

HCG: This blood test might be used to help diagnose a man with testicular cancer, or to monitor the effect of treatment for testicular cancer. It has also been noted to be elevated in some stomach, pancreatic, lung, colon and liver cancers.

Alpha FetoProtein (AFP): This is used to monitor certain liver cancer as well as testicular cancers.

Carinoembryonic Antigen (CEA): This monitors cancers of the colon, rectum, stomach, pancreas, prostate, lungs, and breast. It is NOT used to diagnose

cancer because it is non-specific, but it can be used to monitor changes over time to evaluate response to treatment. It may be elevated in smokers and in people with chronic obstructive pulmonary disease, pancreatitis, hepatitis and inflammatory bowel disease.

CA 19-9: This tumor marker is mainly used to help diagnose and monitor treatment for pancreatic cancer. It may also be elevated in cancers of the stomach and colon.

CA-125: This may be elevated in some patients who have ovarian cancer, as well as in some cancers of the pancreas, breast and colon. Since it is not always present in these cancers, and it is non-specific, it is mainly useful in following the progress of treatment.

CA-15-3: This is known as the breast cancer antigen. It is used in combination with CEA to monitor the breast cancer patient's response to treatment. It is not always present in breast cancer. It is not always present in breast cancer.

Protein electrophoresis (Urine-Bence-Jones) (Serum-immunoglobins): This monitors proteins in the blood or urine, which may be elevated in myelomas.

CA 27-29: This tumor marker may be elevated in some breast cancers.