

CHAPTER 5

EARLY DIAGNOSIS

For dealing with any problem, accurate diagnosis is very important. If the diagnosis is accurate, then there is better chance of taking right steps. This chapter deals with some standard approaches and some novel diagnostic tools for very early detection of cancer. The mainstream medical specialists may not accept some of these novel diagnostic approaches. These are my personal observations and opinions. I do not claim that all these techniques are guaranteed to make correct diagnosis about the presence or the absence of cancer. Many techniques are still experimental and may not be available locally. This chapter is being written for the information of the reader and not to direct him/ her either for, or against, any particular technique. The book “Alternative Medicine Definitive Guide To Cancer” by Burton Goldberg, Future Medicine Publishing, Tiburon, California, has been a reference source for my current writings. Reader should consult his own doctor before opting for any particular tests.

Invisible Cancer:

Cancer like cells are circulating in body most of the time. These cells are effectively caught and destroyed by our healthy immune system. Hence it is much better to strengthen our immune system so that cancer cells, even if present in our body, will not grow and lead to cancer disease. Mere presence of few cancer like cells in the body is not clinically the cancer disease. Only when such cells establish, spread and grow unchallenged, cancer makes its foothold and then becomes a disease. These stages may take from few months to many years. In some patients, small microscopic cancer may remain unchanged for many years. A person may die naturally or due to some other disease at a mature age and only at autopsy such tumors are accidentally discovered. This is especially true in cancer of prostate, a disease of old age. Here the cancer could be looked at as a co-existing, unwanted companion tumor. Careful thoughts must be given to various natural therapies for small microscopic tumors that are not causing any symptoms. Obviously, such tumors need a close watch under

medical supervision. Heroic aggressive treatments are not necessary. We have to make sure that the treatment is not worse than the disease.

Cancer Check-ups:

Cancer check-ups, as conducted in various clinics and hospitals, usually involve clinical examination by a doctor in addition to routine blood tests and X-ray of chest. Additional tests are ordered by the doctor as per the specific complaints of the patient. These methods are helpful to some extent but are not 100% guarantee against cancer. These tests provide some sense of security. Sometimes, check-ups may lead to more testing in the persons, if cancer is suspected. As stated before, cancer is a disease of cells. A cell is a very small microscopic structure. When only few cells are affected in cancer, there may be very few symptoms and signs for the diagnosis of cancer. It is nearly impossible to diagnose cancer in very early stage at cellular level. Even in a cubic millimeter tumor, which is like a pinch-size tumor, there might be as many as 1 million (10 lacs) cancer cells. Unless the tumor becomes at least 2-3 millimeters in diameter, it cannot be seen on any X-rays or modern scanning methods such as CT scan or MR scan. Cytology or biopsy, which is the study of cells under microscope, is much more sensitive technique but it cannot be routinely practiced on wide scale on healthy people routinely. Furthermore, even if such a routine cytology/ biopsy/ X-ray/ Scan were performed and the reports were found to be normal, there would be no guarantee that the same test few months later would come normal. The currently invisible cancer may become visible within the next 6 months, after one year or at any later time. We have to consider these facts before we can understand about the early detection of cancer. The currently available laboratory tests have these obvious limitations. This does not mean that such tests should be avoided. These tests should be done for early detection in people who have got some reason to undergo such testing.

When a tumor or an ulcer becomes visible, biopsy is the most reliable test for cancer diagnosis. Before we go into this further, let us review some other tests, which might be useful in early detection of cancer. Cancer cells, unlike normal cells, sometimes

cause immune activation through antigen-antibody reactions. Antigen could be any biological substance (virus, toxin, fungus, bacteria, parasite, protein molecule) that the body comes to regard as a foreigner not belonging to the body. In cancer, antigen is a small protein molecule on the surface of a cancer cell. This enemy is sensed by the immune system especially by lymphocytes, our white blood cells. These sensor cells go near the antigen and react with it to form what is known as an antibody. Antibody gets attached to antigen and thus destroys the antigen. Thus a disease-causing antigen is neutralized. If the production of antibodies is deficient or slow compared to production of antigens, the immune system cannot cope and the disease progresses. These antigens and antibodies, even if present in very small quantity, can be detected in the blood of the patient. Sometimes, cancer cells produce certain chemicals that are called tumor markers.

Few important tests are mentioned below for the information of the reader. It is strongly advised that the reader himself or herself should consult own doctors before considering any of these tests.

PAP Test:

A technique such as PAP smear, which examines secretions from vagina, is advocated for screening of cancer of uterus in women. The PAP test would be able to detect very early changes in the cells appearing suspicious. However, for majority of solid tumors, which are hidden deep within the body, needle cytology or biopsies are the only methods for accurate diagnosis. Obviously, these techniques, which need attending a specialized medical clinic, and which might involve a cost to the patient, would not be feasible for screening of cancer in majority of the population. PAP test is also performed for oral cancer, esophageal cancer and gastric cancer, where secretions from the tumor can be collected on a swab.

PSA:

PSA is a test used for detection of cancer of prostate. PSA stands for Prostate-Specific-Antigen. This is a blood test. Raised PSA is suspicious for cancer of prostate.

PSA is marginally raised even in non-cancerous enlarged prostate or in infection of prostate. The test has some false positive and false negative results. It has to be considered together with medical examination by a physician. PSA testing is more important to monitor the progress of the patient of prostate cancer. The test is available in all the modern laboratories, although it is somewhat expensive.

AMAS:

This test is not readily available even in developed countries. The test claims to diagnose most of the cancers in early stage, when there are no other signs to suggest cancer. This test was developed by a Harvard trained physician, Dr. Sam Bogoch in 1990s after 20 years work in laboratory. AMAS stands for “Anti-Malignin-Antibody-Screen”. It assumes that all the cancer cells have a common surface antigen on the cancer cell wall. This antigen produces a common antibody in most of the cancers. The antibody level is measured in AMAS. If raised, there is a high probability of some type of cancer in the body. The physician then can order more specific tests for cancer location. When the cancer tumor is obvious, this test is not necessary. This test is available through Dr. Bogoch’s Oncolab at 36 The Fenway, Boston, MA 02215. (USA phone: 1-800-922-8387). The test is expensive and not easy to order from abroad.

Tumor Markers:

Many cancer growths secrete certain chemicals, which are called tumor markers. CEA, CA-15, CA-125, Beta- HCG, Alfa-feto- proteins are names of some of such tests for tumor markers. These tests are usually employed after the diagnosis of cancer to see the extent of cancer and to monitor the progress of cancer. These are not routinely used for early detection of cancer. Besides these common tumor markers, many other tumor marker tests are being developed. In breast cancer, ER (estrogen receptor) and PR (progesterone receptor) tests serve important role in planning the treatment of the patient.

Mammography:

This is a test with special X-Ray technique to highlight the internal structure of the breast. The most basic way to detect breast tumor is by self-examination or by the examination done by a doctor. Majority of the breast lumps are benign. Only a small proportion is cancerous. Mammography may serve some purpose for women at high risk for developing breast cancer. The mammography is somewhat painful and involves use of X-rays, which in turn could have some minimal hazards. Although being promoted as routine screening test for large sections of population, the cost-benefit ratio of this technique is controversial. Besides being controversial, recommendation for routine periodic mammography in all women above say 40 years of age could lead to anxiety and cancer-panic. Screening with mammography in every woman might not be cost effective and may be counter-productive. There is a suggestion that mammography may detect a large number of slow growing tumors which may not be highly malignant. Such tumors, although cancerous under microscope, might not lead to the usual aggressive breast cancer, which takes the toll of the patient in a short time. Such slow growing tumors might need only periodic observation rather than any prompt surgery, chemotherapy, radiotherapy etc.

According to Dr. David Plotkin, M.D. (Plotkin, D., "Good News and Bad News about Breast Cancer." *The Atlantic Monthly*, -June 1996, page 82), "Mammography is only leading physicians to diagnose an ever-larger number of harmless breast tumors. Patients who otherwise would never have known they have a tumor may needlessly suffer through the unique pain, anxiety, disfigurement and expense associated with modern medicine and cancer." While a mammogram may accurately indicate a tumor, it can not in itself tell what time it will take to double its own size. Many slow cancers have tumor doubling times more than 15 to 20 years. A 1 cm small tumor detected in a 60 year old woman may perhaps become 2 cm large, without causing any trouble at all, when the woman reaches 80 years of age. In effect, the woman is co-existing with her slow cancer without the need for any toxic chemotherapy, radiation or surgery. Of course the woman should make her own choice about whether she needs such tests and what further management she would be prepared to undergo, with advice from an open minded doctor. This is the age of information and the patients

should be given various options, explaining merits and demerits of each line of treatment. Each person should be able to decide his / her own options especially in a disease like cancer, where the modern treatments cannot guarantee any cures.

Hemoccult Test:

Testing stools for trace of blood is a simple but an important test. Tumors in colon and rectum usually bleed and the blood passes in the stool. If the amount of the blood is large, a person can notice the bleeding for himself. However, early cancer in colon may pass only very small amount of blood, which cannot be seen by eyes. The test for occult blood in the stool can detect small traces of blood. This test could be done as an initial screening in patients with high risk of colon cancer.

Endoscopy:

Passing special fiber-optic tubes with lights and camera to study various cavities of body is known as Endoscopy- inner viewing. Routine use of these tests for mass screening is not feasible. These tests serve very useful purpose for early detection in the patients at risk of cancer. Laryngoscopy, Bronchoscopy, Gastroscopy, Colonoscopy, Proctoscopy, Peritonoscopy are some names of the endoscopies related to different areas of body.

Darkfield Microscopy:

Since the use of standard microscope has failed to detect any signs of germs in cancer tissue, it was believed until recently that blood contained no living organism that could contribute to cancer. Standard microscopy and even electron microscopy, due to its staining and preparations, lead to death of any living matter on the slides. This makes any observations about small living particles in the cells impossible. Only well recognized forms of dead bacteria, viruses and fungi could be identified by such techniques. Darkfield microscopy, which is the examination of live blood smear without staining under reflected light in a dark field, has been supplying compelling evidence about existence of such live particles, which may be responsible in cancer causation. Experienced doctors can detect abnormal forms of blood cells together with

living motile particles called protits and somatids. Conversion of these protits and somatids to aggressive forms is associated with cancer. Besides cancer, darkfield microscopy is useful in detection of various other chronic and acute diseases. This technique is not readily available in common laboratories or even in modern hospitals. A French Canadian scientist Gaston Naessens, Prof. Günter Enderlein from Germany and Dr Virginia Livingston Wheeler from USA are few scientists who have done pioneering research in this field. Darkfield microscopy, although easy to learn for health practitioners, is not commonly available.

Biological Terrain Assessment:

This is a phrase used to describe the internal biochemical conditions, general health and activity at cellular level. Body maintains precise pH, which is a measure of acidity/ alkalinity of various tissues and fluids in the body. Blood is kept at a pH of 7.34 to 7.4. Foods used for life process create acidity or alkalinity in the body. Metabolism of foods is a process of Oxidation-Reduction. To liberate energy from foods we eat, the process of oxidation-reduction is being continuously used in all the cells. Certain foods can lead to creation of excessive oxidative radicals, which are called free radicals or oxidative stress. These free radicals are highly reactive and could cause many harmful chemical reactions in cells. Such reactions lead to cellular toxicity, improper cellular function and to ill health. Tissues conduct electricity for various biological functions. This conductivity has to be kept at an optimal level for good health. Measurement of pH, oxidative stress and electrical conductivity of certain tissues is known as assessment of Biological Terrain. There are various instruments and laboratory tests developed to assess the biochemical activities of the body and to assess tissue toxicity. These tests also suggest ways to correct any abnormal findings, mostly with diet and nutritional products. BTA, CBC, Maverick Test, Pantox Profile, Metamatrix Toxmet Screen are names of some of the patented laboratory tests being used in USA for such screening tests. Other tests assess the tumor antigens, cell sub-populations and lymphocyte size to predict cancerous trends. Interested reader may refer to the book “Alternative Medicine Definitive Guide to Cancer” by Burton Goldberg.

X-Rays:

Since the discovery of X-Rays by Wilhelm Roentgen of Germany in 1895, X-rays became an important part of the modern medical science. With X-rays, it was possible to see and photograph internal organs of body! X-rays were used for diagnosis and treatment of countless medical conditions. In an X-ray tube, invisible rays are produced when very high voltage electrical current is applied. These rays can go through the body and take a picture of internal structures; much like a camera takes pictures of the outside world. With use of various contrast media, the x-ray machines can take precise pictures of the internal organs like stomach, kidneys, gall bladder, blood vessels, heart, lungs, brain etc. This is the science of radiology.

Scans:

In the past few decades, very sophisticated techniques were developed to take pictures of internal organs. CT Scan machines (Computed Tomography) use a large number of simultaneous X-ray beams penetrating through body. Computer then develops a composite radiographic picture of a particular slice of any body part. Nuclear medicine has various techniques to see internal organs concentrating the radioactive isotopes injected into the body. These are called isotope scans. Isotope scans for bone, liver, brain and other organs are being used for medical diagnosis. MR (Magnetic Resonance) scan, a recent addition, use strong magnetic pulses to cause transient changes in the orientation of water molecules, which are present in every cell and tissue. By changing patterns of such water molecules (specifically the protons of the hydrogen atoms in water molecule), internal organs become visible on Magnetic Resonance (MR) scan. Ultrasound scans, called sonography, use high frequency sound waves to traverse through body parts and take pictures of internal organs. PET scan and SPECT scans are names of some other rarely used scanning techniques for imaging of internal organs. As a rule, these scans will see any tumor only when it is at least a few millimeters in size. As stated earlier, a cubic millimeter of tumor might contain about 1 million cancer cells! These scans cannot see individual cancer cells. X-rays and scans can see small tumors, but at this stage cancer cells have already

established a foothold in the body. Again, these tests will point out to small tumors but would be unable to tell if it is a cancer or some other type of shadow. Compared to these imaging x-rays and scans, the tests for tumor markers and tumor antigens are much more precise and helpful for early detection of cancer. X-rays and nuclear radiations used for medical diagnosis and medical treatment are known to cause cancer in exposed people. Hence the use of X-rays and other radiations has to be done with great caution.

Biopsy:

Biopsy is the Mother of All Tests for Cancer. Without biopsy, cancer diagnosis is not complete. In biopsy, a small portion of tumor is removed and seen under microscope. An experienced pathologist can very easily see the signs of cancer in the slide under microscope. Cancer cell is larger, irregular and has darkly staining large nucleus within cell. Signs of disorder, invasion and encroachment are abundant. Cancer can be classified to exact type as per the microscopic appearance. Carcinoma is name given to malignancy arising from linings of the internal organs or skin surface. Squamous cell carcinoma arises from the mucous lining or skin surface. Adeno-carcinoma arises from the lining of glandular tissue such as stomach, colon, breast etc. Carcinoma could be of high grade or low grade. Higher the grade, more aggressive and dangerous the spread of cancer. Sarcoma is term used for malignant tumors arising from connective tissues such as bones, fats, muscles, cartilage etc, which are not communicating with outer surfaces or with inner cavities in the body. Leukemia is name used for cancer of blood, which is the liquid of life constantly on the move through veins and arteries. Initially, leukemia does not form any localized solid tumors, although when advanced, secondary tumors are seen in various parts of body. Lymphoma is the term used for tumors originating in lymph nodes and organs connected with the lymphatic system of body. Myeloma is a special type of tumor primarily starting in bone marrow without involving any other organs, at least in the beginning.

FNAC, Needle Biopsy, Punch Biopsy, Excision Biopsy, Incision Biopsy, Endoscopic Biopsy are various terms used to describe different techniques of biopsy. FNAC stands for Fine Needle Aspiration Cytology. With a very thin needle, a drop is aspirated from the suspected tumor area. Some tumor cells come in the drop, which can be studied under microscope. Needle biopsy tries to remove a little larger length of tumor tissue, which is easier to study and which can provide more precise diagnosis. Punch biopsy uses even larger forceps to punch out a part of tumor.

When the tumor is large, it is incised and only a part of tumor is removed for study. This is called incision biopsy as opposed to excision biopsy where the whole tumor is removed in one piece for pathological study. Biopsy is usually done before any major surgical operation to confirm the diagnosis of cancer and to see the exact type of cancer. This information helps a great deal to plan the operation. Before planning major operation, in addition to the biopsy, x-rays, scans and blood tests are performed to rule out the spread of cancer to other organs. If cancer is widespread, major operations are of little use to control the cancer.

After the biopsy the chunk of tumor is treated with certain chemicals and then embedded in a paraffin wax to make a small paraffin block. Very thin sections of such blocks can be sliced, put on glass slides and made ready for examination under microscope. An expert pathologist can study such slides and give his/ her opinion about cancer. After a major operation to remove the cancer, the entire tumor together with surrounding tissue is sent to the surgical pathologist for detailed examination of the whole specimen. Lymph nodes, small glands around the tumor, are also removed to see if the tumor cells have already gone into these areas. The lymph nodes are like police stations, which are supposed to screen the flow of the lymph and arrest any unwanted cells, germs or toxins. When the tumor is aggressive, it goes through the lymph nodes and spreads in distant areas of the body. This is then called the advanced stage of tumor. Sometimes, tumor cells, bypassing lymph nodes, travel through blood circulation and land in distant organs. This is called distant metastasis. When the

cancer tumor spreads to lymph nodes, it is called as 2nd or 3rd stage. When the distant organs show metastasis of cancer, it is very advanced 4th stage.

Conclusion:

In summary, cancer diagnosis is difficult in very early stage. The symptoms are vague and can simulate many other disease conditions. Initially, doctors usually may not order all the tests to rule out all the types of cancer. Many times this intensive medical testing is not feasible. Furthermore, patients are also reluctant for so many tests because of economical difficulties, psychological fear and inconvenience of such medical tests. Normal tests at any particular time do not guarantee that the patient will never have cancer. Since the cancer cells are very small and since these cells grow slowly, mostly unnoticed by our immune system, cancer can become visible at any later date. Therefore, such tests for cancer detection should be undertaken with understanding of their scope and limitations.