THE PERODIC MEDICAL EXAMINATION AND THE EARLY DIAGNOSIS OF CANCER

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"He is the greatest discoverer who finds the pre-symptoms of the symptoms; the greatest therapeutist is he who cures before the disease exists."-Geo. M. Gould, M. D.

"In the blood lies more disease as well as more premonitory symptoms than can be found in any other part of the body. There will come a time when people will have their blood examined as regularly as they go or ought to go to their dentists."-Robert Lincoln Watkins, M. D.

The periodic medical examination today has the endorsement of physicians, social welfare workers, life insurance companies and of large numbers of an intelligent public. Of the diseases taking the highest toll of human life--heart disease, nephritis, pulmonary tuberculosis and cancer, the first three are localized in a vital organ, while the last named may attack any tissue of the body. In the periodic medical examination, the heart and the lungs are carefully examined to detect any variation from the normal in morphology or function, and the urine is examined to discover if symptoms of nephritis be present.

What is being done at the periodic medical examination to discover the pre-symptoms of the symptoms of cancer? Are the pre-symptoms of cancer as definite and as easily discovered as the pre-symptoms of heart disease, lung disease or of kidney disease? Are there any predisposing factors? If so, what are they? Since cancer may attack any organ or tissue, where shall the pre-symptoms be sought and how shall they be recognized? It is the purpose of this article to outline in a logical order the predisposing causes of cancer and the pre-symptoms of pre-cancer and cancer that may be discovered at a periodical medical examination.

*Reprinted from the *Journal of the American Association for Medico-Physical Research*, August 15, 1929, by the Anti-Cancer Center of the District of Columbia, Inc.

The commonly accepted symptoms of cancer, those given in textbooks on medicine, those enumerated by cancer experts (surgeons, pathologists, radiologists, and roentgenologists), and promulgated by the American Society for the Control of Cancer, are those of a late stage in the development of this dreaded disease. When these are discoverable the disease has often reached an incurable stage.

I. Predisposing Factors

1. HEREDITY

Cancerologists now recognize that a favorable soil is a prerequisite predisposing factor in the development of a cancer growth. There is much scientific evidence that this soil or predisposition may be inherited. In 1906 Williams pointed out that both tuberculosis and cancer predispose the

offspring to cancer. Maude Slye has discovered that cancer in mice is a character inherited in accordance with the Mendelian law. She has observed that chronic irritation, long considered the real cause of cancer, does not produce cancer growths in mice not predisposed to such development by inheritance. Willy Meyer considers the predisposition to cancer to consist in a nervous state associated with or independent of endocrine disfunction and the absence of a physiological balance of the salts of the blood plasma. Sir Wm. Arbuthnot Lane and others maintain that the predisposed soil may be acquired as well as inherited. Perdue finds the blood plasma of the aged is a predisposed soil for the development of a cancer growth. Slosse and Reding have found the curve of induced hyperglycemia of those consanguinously related to the cancerous to be comparable with that of the non-treated cancerous.

2. AGE

Cancer is a disease of persons past middle life. The natural processes of growing old render the organism more or less susceptible to cancer. The decadence of life is marked by a deaquafication of the colloids, by a hardening of the tissues. The ionized water of the cells is extruded, the blood plasma becomes hyperalkaline, the connective tissue elements hypertrophy and the essential cells of the endocrine glands atrophy.

These signs of decadence sometimes appear very early in life. Cancer is not unknown in infancy. It is becoming an important cause of death in early life. In the experience of the Metropolitan Life Insurance Company about one-third of their deaths from cancer of the brain and one-fourth of their deaths from cancer of the bone, kidneys and suprarenals occurs among those under 25. The hazard of death from cancer increases rapidly after middle life. Ninety percent of all cancer deaths occur after 40. One out of every eight deaths among males and one out of every seven deaths among females after the age of 45 is due to cancer. The thoughtful physician will ever have the possibility of the presence of pre-cancer if not of cancer, in mind when examining a person over 25 years of age.

3. SEX, MARRIAGE AND FERTILITY

Cancer, in most countries, is more frequent in women than in men, but in England and the United States this difference in incidence is rapidly decreasing. In Japan and Switzerland the mortality from cancer is about equal for the sexes. Cancer of the stomach causes the largest mortality in both men and women. Cancer of the intestines and rectum is more frequent in women than in men, while that of the mouth, larynx and esophagus is more frequent in men than in women. Cancer of the generative organs is more frequent in women than in men.

A study of the vital statistics of Holland, Switzerland, Italy, Norway and Argentina made by Roffo seems to show that cancer is much more frequent among single women than among married women. This is particularly true after the age of 40 or 45. Cancer of the stomach is found to hold first place in the mortality from cancer for both the married and the unmarried. Cancer of the uterus comes next and cancer of the breast occupies third place.

Investigations made by students in England and Holland seem to show that there is a casual relationship between lactation, or rather the lack of it, and cancer. Among the English women

studied by Bruoanan cancer was found to be more frequent among women who nurse their children only a short period or over a prolonged period than among those who nurse their children during a normal period. In Holland, cancer of the breast is much more frequent among women who do not nurse their babies than among those who do.

To determine whether there is any relation between the incidence of cancer of the breast and fertility, Roffo made a special study of 528 cases (37f married women and 152 widows), who presented themselves at the Institute of Experimental Medicine for the Study and Treatment of Cancer with cancer of the breast during a period of five years. One fourth of these, 92 married women and 43 widows, were childless. One-third had borne one, two or three children each. About one-fourth had borne four, five or six children each. The total number who had borne more than six children each was 89. As to age 364 were past 40, 146 were between 30 and 40, and only 18 were under 30.

Among the conclusions drawn by Roffo from his studies of the relation of cancer to the sexual life of woman are the following:

1. Cancer is more frequent among unmarried than among married women.

2. Cancer of the breast is 30 percent more frequent among the childless married women and widows than among those who had borne children; is more frequent among women who have borne only one, two or three children than among those who have borne large families; is more frequent among women who do not nurse their children normally:

3. The absence of the use of an organ for normal physiological function may be considered a causal factor in the development of a cancer growth.

Other investigators have noted that cancer of the uterus is more frequent in unmarried than in married women is more likely to appear in a non-parent married woman or after the climacteric than during the child bearing period of mothers. In any case the electrical conductivity of the cancerous uterus is low.

4. OCCUPATION

Irritation, the secondary factory in the production of a cancer growth, may be due to the occupation of the patient. The source of irritation may be due to the occupation per se, to the environment of the occupation, or to reflex conditions set up by the occupation. Sunlight, for example, is an irritant to blond skin. Perdue finds that there are more cancers of the skin above the collarbone and below the wrists in blond men who work out of doors than all other cancers put together. The mortality from cancer of the skin is slight. Cancer of the skin among full blood Negroes is practically unknown. Among the occupations that favor the development of cancer of the skin are farming, fishing, furnace stoking, cotton spinning, chimney sweeping, metal working.

Among the middle and upper classes of England cancer of the exposed areas forms 58 percent of the average for all types of cancer. Unskilled laborers show 140 percent of the average for all

classes having cancer. Next to the skin the parts of the body subject to direct irritation are the mouth, larynx, throat and stomach. The occupations that show the highest mortality from cancer of the digestive tract are those of waiters and barmen. Business men who bolt their food at lunch show a high percentage of cancer of the stomach. Clergymen are reported to have the lowest mortality from cancer.

II. Previous Personal Health and Subjective Symptoms

The general health and periods of illness during childhood, youth or adult life may give valuable hints as to the presence of predisposing factors to cancer growth. Among the things to be looked out for are internal goitre, psoriasis, gastric ulcer, mucous colitis, disturbed or painful menstrual function, all of which seem to be pregrowth symptoms of cancer, since all are cured by the constitutional treatment of cancer Even the tubercle bacillus seems to require a soil predisposed to cancer for its development. Previous injuries, mechanical or chemical, may have furnished the irritation necessary to stimulate a malignant growth in a person predisposed to such growths. And, don't forget to inquire about therapeutic measures that have been employed that, may have acted as irritants, such as vaccines, mineral drugs, surgery, x-rays or radium.

In the diagnosis of many diseases physicians take into account the present and past subjective symptoms of the patient. Why not in cancer? Koch has pointed out that the subjective pregrowth symptoms of cancer are mainly manifestations of interference with normal nerve function, more particularly with certain mechanisms of the nervous system. Among the prevailing symptoms likely to develop regardless of the location of the cancer tumor are manifestations of interference with the normal functioning of the second and third cranial nerve mechanism, such as optic migraine, scotomata, haziness in vision, and difficulty in accommodation. There may be evidence of loss of muscle control. Movements are not or cannot be coordinated.

Peripheral neuritis is often among the pre-symptoms of the development of a cancer tumor. Brachial neuritis often precedes cancer of the breast; intercostal neuritis, cancer of the liver; sciatica, cancer of the alimentary tract; backache (the so-called lumbago that does not readily yield to treatment), cancer of the pelvis.

III. Humoral Alterations

PHYSICAL CHANGES IN THE BLOOD

Long before histological changes have taken place in the tissues invaded by the cancer growth, histological and chemical changes in the blood can be observed. Anemia is a common pre-symptom of cancer. This is due to a relative decrease in hemoglobin rather than to a decrease in the number of red blood cells. The latter are changed in character. This change seems to be brought about by the presence of a virus or toxin of which little is known. Its action is that of a slow poison. It markedly reduces the hemoglobin carrying power of the erythrocytes and later reduces their number. Thus both the oxygen carrying power of the blood and its nutritive value are diminished. From this follows a train of nutritional disturbances, such as indigestion, loss of weight and strength and symptoms of autointoxication and deficient endocrine function.

Cachexia in time becomes pronounced. The physical changes noted in the blood follow chemical and electrical changes which are taking place.

Viola, an Italian, was the first to note that the blood of the cancerous differs from that of the normal wizen examined in different strengths of salt solution. Perdue some ten years later verified the findings of Viola. He used two strengths of salt solution, a one percent, and a 32 percent. The normal physiological alkalinity of the blood is 85 percent. In such a solution the osmotic balance being preserved the red blood cells retain their normal circular outline, but if the solution be increased to one percent the normal red cells will show markedly crenated edges. The partially depleted cells will have slightly wrinkled edges while the edges of the completely depleted cells will have a plain circular outline. Only the red cells of the greatest resistance can be seen at all in the 32 percent salt solution.

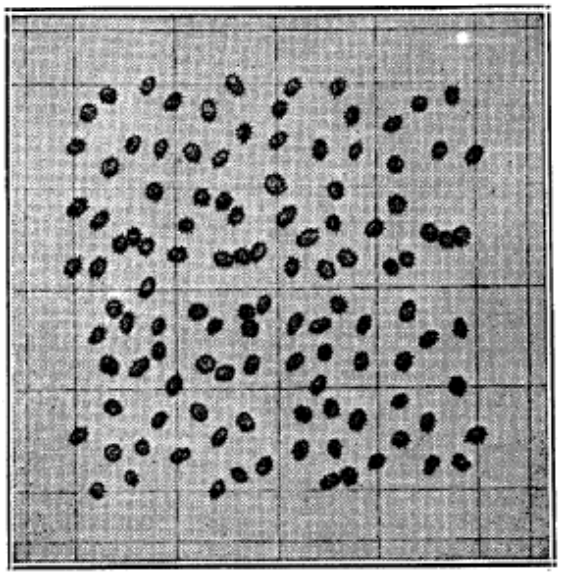

Figure 1

FIG. 1 shows the appearance of the normal blood corpuscles in a 1 percent solution of common salt. The natural condition of the liquid part of the blood is 85 percent common salt. This is the condition under which the red blood corpuscles live and carry oxygen to the tissues. In a stronger salt solution they wrinkle up as the picture.

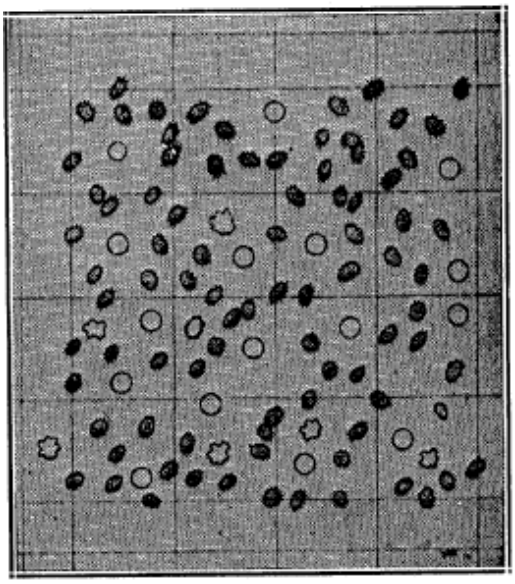

Figure 2

FIG. 2 shows the blood of a cancer patient in a 1 percent salt solution. Many of the corpuscles have become depleted in their resistance and will no longer wrinkle up in the 1 percent solution of salt. This is the common condition in persons whose cancer is not very far advanced.

It is about 18 months since I began the practice of having the laboratory tests herein described made for all patients suspected as being pre-cancerous or cancerous. Over 100 cases have been examined. The percentage of non-crenated cells has varied from 5 percent to 100 percent, the average being above 50 percent.

In pre-cancer and the early stages of cancer the number of erythrocytes is often considerably increased above the average normal count, but in advanced cancer it is generally reduced, sometimes to below 3,000,000. The hemoglobin in pre-cancer and the early stages of cancer varies from 60 to 90 percent. In the late stages it may fall below 30 percent. The hemoglobin index, that is, the ratio of hemoglobin to the number of red blood cells is reduced in pre-cancer and cancer.

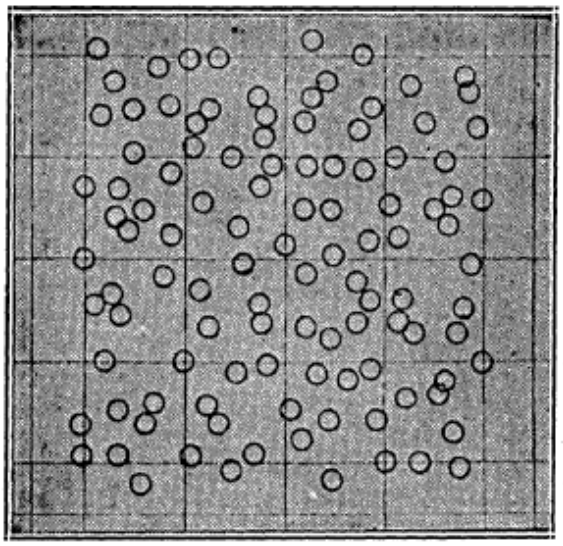

Figure 3

FIG. 3 shows the blood of a cancer patient in which all the red corpuscles have become weakened and depleted so that they will not wrinkle up in a 1 percent salt solution. This is the condition called the resistance minima or the least resistance. It is quite commonly found in advanced or bad cases of cancer.
FIGS. 1, 2 and 3 and the descriptions of them are reprinted, from Perdue's report.

The leukocyte count varies so much in pre-cancer and cancer that a definite deduction cannot be drawn. In my cases, it has varied from 3,000 to 12,600. The polymorphonuclears have varied in my cases from 37 to 85 percent. These variations may be due to some concomitant conditions rather than to the presence of a cancer toxin.

There is a difference in suspension time between normal and cancerous blood in a citrated solution. The red cells of normal blood by virtue of their surface charge tend to remain in suspension for a considerable time while that from diseased blood tends to settle out rapidly. The diminution in suspension time is brought about by losses in the absorbed colloidal (ionized) constituents.

2. CHEMICAL CHANGES IN THE BLOOD

Among the chemical changes noted in the blood of the cancerous and in pre-cancer besides an increased alkalinity are a reduced ionized calcium content and an increased sugar toleration. Slosse and Reding of the University of Brussels, recently conducted an extensive and exhaustive research on the humoral alterations in cancer and pre-cancer. Over 350 subjects were studied. These were divided into several groups: non-cancerous with no family history of cancer, non-treated cancerous, cancerous relieved of their tumors by surgery, cancerous treated by irradiation, subjects having benign tumors usually pre-cancerous and subjects apparently in good health consanguinously related to the cancerous.

The authors studied the acid-base reaction and the ionic equilibrium of the plasma because these two elements, the pH and the ionized calcium, beside their general importance, constitute a fundamental biologic mechanism of cellular division.

An acid condition of the plasma is inhibitive to the beginning and to the continuation of cellular division while even a slight optimum alkalinity is indispensable able. Scientists agree that normal blood can have only a slight variation in the hydrogen ions, the minimum being pH 7.30 and the maximum, pH 7.40. Life is incompatible except between a pH 6.80 and pH 7.80. If the alkalinity is above pH 7.40 the blood is said to be hyperalkaline, if below pH 7.30, hypoalkaline or acid. Slosse and Reding noted that an increase in alkalinity and a fall in the concentration of Ca ions (the ionized calcium content of the blood), was a constant phenomenon in cancer and pre-cancer. They employed the Hastings and Sandroy method to determine the pH, the VanSlyke method to determine the total Cot free and combined and the method of Roma to determine the ionized calcium content.

The first group, normal subjects, age 21 to 68, with non-cancerous heredity gave a minimum pH of 7.33, a maximum of 7.39 and an average of 7.36. The group of non-treated cancerous gave a minimum pH of 7.42, a maximum pH of 7.57 and an average pH of 7.48. The average ionized calcium content of the blood of this group was nearly 30 percent below the average for the group of normal subjects.

For the third group of subjects, those who had been relieved of their cancer tumors by operation, the minimum pH was 7.38, the maximum pH was 7.52 and the average pH 7.43. The ionized calcium content for this group was midway between that for the normal and that for the untreated cancerous. The humoral alterations were found to exist in the group having benign tumors that usually become cancerous, the minimum pH being 7.37, the maximum 7.48 and the average 7.42. From these findings Slosse and Reding conclude that these humoral alterations are not due to the presence of a cancer tumor or to the functional activity of a malignant neoplasm. They are characteristic of the soil in which it is possible for a cancer growth to develop.

The method of Clark instead of that of Roma is usually employed in the United States to determine the ionized calcium content of the blood. By this method the normal ionized available calcium content of the blood serum is somewhere between 9 and 11 milligrams to the 100 c.c. of blood. In a large number of cancer cases in my private practice, the ionized calcium content of the blood has varied from 3 to 8 milligrams per 100 c.c. of blood. For the same series of cases the alkalosis varied from pH 7.38 to pH 7.60. I have found these blood tests a valuable means of differentiating between malignant and benign tumors, an important aid in determining the course of treatment to be followed in a given case whether a tumor be discoverable or not, and a good check on the effect produced by any kind of treatment.

The sugar content of the blood of the cancerous is high. The curve of sugar toleration of the pre-cancerous and the cancerous differs markedly from that of the non-cancerous. A simple method for making the test is to first prepare a solution of fifty grams of Merck's pure anhydrous dextrose dissolved in 200 no of distilled water. After a fast o f 1 0 to 12 hours, never longer, blood is drawn from a vein in the elbow of the patient and the content of sugar in milligrams is noted on quadrille ruled paper. Then administer the dextrose solution and every half hour

thereafter draw blood from the vein and record the sugar content on the paper, until the sugar curve is completed.

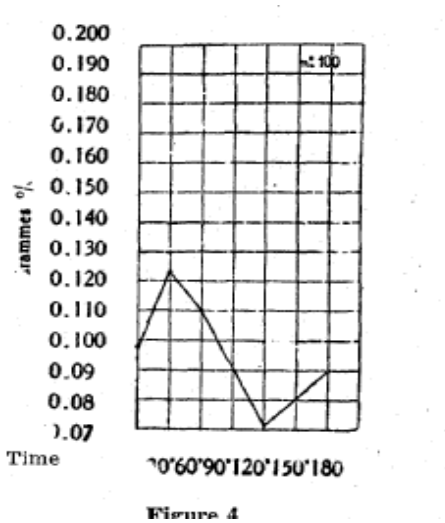

Figure 4

FIG 4 shows curve of blood sugar tolerance in the normal.

In normal subjects the apex of the curve is realized in 30 minutes and the return to normal level is completed in 60 to 90 minutes. The average increase being 22 milligrams for 100 on of blood. In the non-treated cancerous, in the cancerous who have been relieved of their tumors by surgery and in those consanguinously related to the cancerous, the apex of the curve is reached much slower and the rate of return to normal is much retarded. The average time required is over two hours. In one of my cases it was over five hours. The average increase is over 100 milligrams, over four times that of the normal. This test indicates that in pre-cancer and cancer there is a disturbance with the sugar regulating mechanism of the body, a complex mechanism depending on the function of the liver, the pancreas and the muscles.

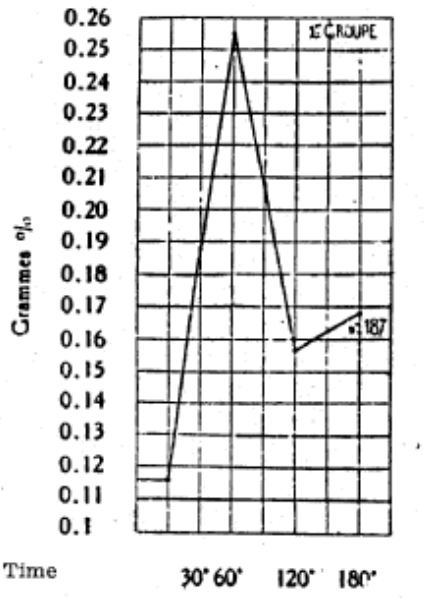

Figure 5

FIG. 5 shows curve of blood sugar tolerance in the cancerous.
(Figures 4 and 5 by Slosse and Reding)

Within the last two years some surgeons, having grasped the significance of the constitutional nature of cancer, are preparing their patients for operation by a preliminary regime of diet and glandular treatment for the restoration of the sugar and the ionized calcium content of the blood to normal. They claim much better immediate results and, so far as can be determined in this short period of time, a delay in the usual time of recurrence. They hope by this combination of constitutional and surgical treatment to effect cures.

Others have noted that the blood of the cancerous differs chemically and even electrically from that of the non-cancerous. Many have sought to develop special chemical and electrical methods for the detection of this difference. Space will not admit of their complete enumeration, much less of their discussion. Suffice it to say that among these are the test of Shaw-Mackensie, the precipitine reaction of Abderhalden, the Botelho reaction of Fisher and Ascoli, and the reaction of Roffo. Crile in his "Bipolar Theory of Living Processes" discusses at length the facts and theories concerning the electrical phenomena of life and the bipolar interpretation of cancer-the nucleus of the cancer being the positive while that of the cytoplasm is the negative pole. Abrams, Butts and others devised electrical equipment for the detection of cancer. The electronic reaction of cancer is positive. The electrical conductivity of cancerous tissue is greater than that of normal tissue. Cancer tumors do not form in tissue of very high electrical conductivity, that is in tissue of high oxidizing capacity.

IV. Summary

A diagnosis of cancer which depends on the discovery of the presence of a tumor, on a biopsy, on a radiograph, on a foul discharge, on hemorrhage or cachexia is a late, not an early diagnosis. These are the signs of advanced cancer.

The early diagnosis of cancer depends on:
1. Heredity. Family history.
2. Personal history: Age, sex, occupation, marriage, fertility, previous illnesses and injuries and the nature of treatment employed, personal habits, living and social conditions, personal subjective experiences, past and present.
3. The findings on physical examination, and
4. Laboratory findings: Physical and chemical examination of the blood noting: hemoglobin, the number and character of the erythrocytes in different strengths of salt solution, the alkalinity, ionized calcium content, the suspension time and the curve of sugar toleration; the presence of occult blood in stomach contents and feces, the absence of hydrochloric acid and the presence of lactic acid in the stomach contents; a reduction in the chlorides, urea and phosphates in the urine.

V. The Physician's Responsibility

If ever the scourge of cancer is to be wiped out, physicians must when making the periodic medical examination of an adult be ever on the lookout for the pre-symptoms of the symptoms of cancer, some of which have been enumerated above. Making a diagnosis of the presence of pre-cancer or cancer in its early stages is like trying a man for murder on circumstantial evidence. No one pre-symptom spell; cancer. But the coexisting presence of several pre-symptoms that dovetail together should warrant a diagnosis of the presence of a cancerous condition and command the immediate institution of constitutional treatment. At the same time, the patient should be warned that any treatment aimed at the destruction of a tumor mass instead of curing the disease may only stimulate it to greater activity since nothing has been done to change the soil favorable to cancer growth. If for any reason surgery may be deemed necessary, the operation should not be performed until the blood chemistry has been brought to a comparatively normal acid-base and ionic equilibrium balance. Many a useless operation may be averted by first making sure that the patient is cancerous by a proper physical and chemical examination of the blood.

Some day it will be a reproach for a physician to have a patient who has been under his observation for some months or years develop a cancer tumor. The fact that cancer is a preventable disease is fast gaining acceptance with real cancer students. Recognition of the pre-symptoms of the symptoms, more of which will soon be discovered, the danger signals of cancer, is essential to its prevention. As Dr. Wright says: "It behooves us not to wait and see whether we shall get it or not, but to ‘look and see’ that we have not got it."

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