

Lifestyle changes and the “Spontaneous” regression of cancer: An initial computer analysis

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Abstract

*Analyses of the geographical distributions of cancer mortalities in the United States and elsewhere, undertaken previously by the author⁷, suggest that cancer is most common in areas having significant bulk and trace element imbalances in soils and water supplies. In an effort to determine whether a reversal of the associated dietary imbalances might be linked to some cancer regressions, the author has begun to computerize data on lifestyle changes that seem to have preceded many spontaneous regressions. Data is being collected from both orthodox and unorthodox sources. This paper reviews the first 200 cases and presents a synthesis of dietary changes and the use of vitamin, mineral and herb supplements by patients. Analysis indicates that 55.8 percent of the sample had used some form of detoxification, for example saunas, colonics, fasting or coffee and castor oil enemas, prior to their cancer regression. In addition, 175 or 87.5 percent had made major dietary changes, usually of a strictly vegetarian nature. Similarly, 65.0 percent of patients had taken some form of mineral supplement, by far the most frequently used being potassium and iodine. Niacin, B₁₂, and vitamins A and C, bioflavinoids, digestive enzymes and red clover (*Trifolium pratense*) had also been taken frequently. While the sample is not yet large enough to determine whether a reversal of particular bulk and trace element imbalances in diet might trigger regression of specific cancer, these results are suggestive and imply that the potential role of diet in cancer treatment, as well as in cancer prevention, could usefully be reevaluated. 1988:10(1); 17-33. Int J Biosocial Res.*

Key words: Oncology; Nutrition; Spontaneous cancer regression; Diet; Minerals; Vitamins; Herbs; Water Supply

Introduction

We should be paying more attention to the exceptional patients, those who get well unexpectedly, instead of staring bleakly at all those who die in the usual pattern. In the words of Rene Dubos, “Sometimes the more measurable drives out the most important.”

— Bernie Siegel¹

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The U.S. National Cancer Institute and the Canadian Cancer Society are promoting diets that they anticipate will reduce the incidence of cancer. Interestingly enough, many of the 200 patients who experienced regressions had diets that were extreme forms of those now being championed by orthodox medicine. The parallels are so marked, and the links with the geographical distribution patterns so intriguing, that the potential role of diet in the treatment of cancer appears to merit far greater attention than it is currently receiving.

— H.D. Foster

The disappearance of a well developed malignancy, for no known reason, is termed spontaneous cancer regression. It appears to occur in less than one case in a thousand³ and possibly as rarely as one in 100,000.³ To illustrate, Everson and Cole⁴ assembled all the examples recorded in the world medical literature from 1900 to 1965 and added cases from the experiences of their friends. After excluding squamous cell carcinoma of the skin, leukemia, Hodgkin's disease and a large number of cases that did not fulfill their prerequisites of confirmed diagnosis and no significant treatment, they identified only 176 spontaneous regressions.^{4,5} However, as Nossal² has pointed out, while complete regression of widespread metastatic disease may be rare, the destruction of small numbers of tumor cells during the early stages of cancer may be almost common place. There is, for example, a better than 80 percent 5-year survival rate for Stage I breast cancer patients. Yet such tumors possess about 10^9 cells and it is inconceivable that none of those has escaped the lesion created by even the most skilled surgeon. This must imply that patients' defense mechanisms can frequently cope with a small tumor load. Indeed, there is a considerable body of research literature that suggests that the development of cancer cells is not a one-in-a-lifetime aberration but rather a normal process that occurs repeatedly in everybody. In 1957, Burnet⁶ first suggested that the immune system, as part of normal immune surveillance, typically recognizes and destroys such abnormal cells. If this is

true then the spontaneous regression of cancer appears to represent a spectrum of events which occurs frequently in the early stages of carcinogenesis, but becomes very much rarer as the condition worsens. Nevertheless, that it takes place at all is extremely significant and may hold enormous future promise for the treatment of malignancies.

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In 1986, this author published details of in excess of 13,000 correlations between the geographical distributions of 219 environmental variables and mortality from 66 specific cancers, or groups of cancers, in the United States.⁷ These correlations and others from Britain, the Peoples Republic of China and Canada⁸ tended to suggest that cancers (with the exception of the lymphomas and the leukemias) are most common where the population is exposed to both carcinogens and to dietary bulk and trace element imbalances. The latter appear to occur where soils and drinking water carry elevated, or depleted, levels of a vari-

ety of elements. The organ at risk seems to vary with the associated imbalance. Calcium, for example, may be protective against many cancers of the digestive tract, whilst simultaneously promoting cancer of the liver. Sodium excess may be linked to cancer of the stomach, yet high intakes appear to reduce the incidence of skin cancer.

In an effort to explore whether the deliberate or accidental reversal of the bulk and trace elements imbalances, that appear to be linked to specific cancers, could have accounted for at least some spontaneous regressions, this author decided to search the literature and computerize patient case histories. The first step in this process was to define spontaneous regression to permit the selection of suitable cases. To Everson and Cole⁴, spontaneous regression of cancer is a "partial or complete disappearance of a tumor in the absence of treatment capable of producing a regression".

On reviewing the literature it became obvious that such a definition is both objective and subjective. Tumor disappearance is relatively easy to document. The roles played by earlier treatments are not. To illustrate, various authors^{4,9} cite a patient who had received Coley's toxins for neuroblastoma and subsequently lived for 46 years. To them, this was a classic case of spontaneous regression. However, according to published papers by Coley and his daughter, out of a group of some 500 patients treated with toxins, 360 recovered completely.¹⁰ The

patient cited by Everson, Cole and others^{4,9} as a classical spontaneous regression, therefore, would have been seen as a typical success by Coley. This difference of opinion arises because Coley obviously felt that his vaccine was a treatment capable of producing repeated regressions, where Everson and his colleagues did not.

It was decided, therefore, to include in the data bank the histories of patients who had undergone marked regression that had been totally unanticipated by their orthodox physicians. Cases where no conventional treatment had been sought, but spontaneous regression had occurred nevertheless, were also included. The search for such cases was as widespread as possible, including the conventional medical literature, unorthodox publications and the popular press (Table 1). In an effort to separate very well documented cases from more dubious references, each patient's history was placed in one of five classes. A class one record included X-rays and/or other relevant medical test data, together with a detailed case description by a qualified doctor. In addition, there was supporting evidence provided by at least one other recognized member of the medical profession, who had been familiar with the patient. A class two record was similar, but lacked corroboration from a second physician. An autobiographical account by a patient, or a brief overview by his or her attending doctor, was placed in class three. A class four record was one in which the case was described in detail by some other individual, usually an author discussing a particular diet or physicians's career. Class five was used to record a brief mention by a third party. The first 200 cases discussed in this article include 30 class one, 52 class two, 43 class three, 68 class four and 6 class five patients.

Information was taken directly from a wide variety of sources and entered onto computer coding sheets. No limits were set on the age of the literature consulted. To date, the oldest reference was one published in 1888,¹¹ the

most recent in 1986.¹² Data collected in this manner included the patient's age at initial diagnosis, sex and occupation and the primary and any secondary sites involved. The actual length of survival of each patient was also recorded and an attempt was made to establish how this compared with the prognosis. Where the anticipated length of survival had been estimated by the attending physician this was, therefore, also noted. If such an estimate was unavailable, the median survival time for the appropriate specific cancer was entered¹³. This permitted the calculation of a "regression ratio" which was then used to rank the cases, as shown in Table 2. This ratio was calculated by dividing the actual length of regression by the expected

survival time. This minimum time used for the latter was one month. In many cases the resulting figure is an underestimate since the patient was still alive at the time of the citation. Obviously, since expected survival has often improved though time, the "regression ratio" is only a very approximate guide to how unusual the case is. Data was also collected on the types of treatment undertaken, both conventional and unconventional. Particular attention was paid to the source of drinking water, if any, and to diet. In addition, the use of herb, vitamin and mineral supplements was also recorded in detail.

Once the first 200 cases had been abstracted from the literature in this

Table 1

The Frequency With Which Regression Has Occurred in Specific Cancers in the First 200 Cases

Primary Cancer Site	Frequency of Regression	Primary Cancer Site	Frequency of Regression
Lip	2	Prostate	11
Salivary Gland	2	Testis	5
Buccal Cavity and Pharynx	1	Kidney	2
Esophagus	1	Bladder & Urinary organs	1
Stomach	6	Melanoma	8
Large Intestine	10	Skin	6
Rectum	5	Eye	2
Biliary Passages and Liver	3	Nervous System	13
Pancreas	5	Thyroid	4
Nose, Middle Ear and Accessory Sinuses	1	Bone	10
Larynx	1	Lymphosarcoma	8
Bronchus, Trachea and Lung (primary)	6	Other primary malignant lymphoid neoplasms	6
Lung (unspecified as primary or secondary)	3	Hodgkin's disease	7
Mediastinum	5	Lymphatic leukemia	2
Breast	37	Mybloid leukemia	2
Uterine Cervix	4	Leukemia, other & unspecified	2
Body of Uterus	6	Other, unspecified sites & secondary neoplasms	10
Uterus, other	1		
Ovary, Uterine Tube and Broad Ligament	2		

manner, simple descriptive statistical techniques were used to summarize the information and highlight repetition. This paper presents the first progress report. Although the author's main interest is in the relationship of bulk and trace element imbalances to carcinogenesis, a brief description of possible links between vitamins and herbs and spontaneous cancer regression is also included, because of its potential value to the research of others. It should be pointed out that most of the 200 cases described in this publication were abstracted from the unconventional literature, that is from auto-biographies of physicians and patients and from descriptions of specific treatments or of doctor's careers that appeared in the popular press. More conventional sources will be abstracted at a later date. Obviously, the sample is not random and is not intended to be comprehensive.

Results

The sample included patients from ten countries, although the majority lived in the United States (69.0 percent), Canada (7.5 percent) and Germany (5.5 percent). Holland, Denmark, Spain, Scotland, France, Mexico and the Bahamas were other locations represented. The individuals involved varied in age from less than one to 84 years old when cancer was initially diagnosed. Their median age was 46. Ninety one of those studied were males, 106 were females, while the sex of the remaining three was not stated. Table 1 demonstrates the frequency with which specific primary cancers were involved. From this illustration it can be seen that regression occurred most frequently in breast cancer with 37 cases. Thirteen patients recovered from cancer of the nervous system and the same number from prostate cancer. Ten individuals also experienced regressions of bone cancer and a similar number from cancer of the larger intestine. In addition, there were eight spontaneous regressions of melanoma and lymphosarcoma. Metastasis was known to have occurred in 53.5 percent of all cases prior to regression, the most common secondary sites being the bones, the

lymph glands and the liver. It is of interest that the frequency of specific regressions is significantly different from that noted by Everson and Cole,⁴ the reason being unknown.

Table 2 provides a ranking of cases on the basis of their "regression ratios". As previously described, these were calculated by dividing the length of the regression by that of the expected survival time. Only cases with a ratio of twenty or more are included in Table

2, the highest being 510. The values provided are frequently underestimates, since 23 of these 28 patients, including the one with the most impressive "regression ratio", were still alive at the time of their citation in the literature.

Thirteen, that is 6.5 percent, of the regressions occurred in patients who were medical specialists, general practitioners, registered nurses, dentists, veterinarians, engineers, physi-

Table 2

A Summary of the Case Histories of Cancer Patients Who Exceeded Their Anticipated Lengths of Survival by at Least a Factor of Ten

Cancer	Record Class	Metastasis	"Regression ratio" (actual / expected survival times)	Alive at citation?	Treatment(s)
Pituitary gland	1	yes	510	yes	Radiotherapy, Gerson diet
Fibroblastic sarcoma	4	yes	192	yes	Radiotherapy Issels immune therapy
Unknown (metastatic carcinoma of spine and liver)	4	yes	180	yes	Surgery, radiotherapy, William Howard Hay detoxification, raw juice therapy
Left testicle metastatic carcinoma neck and lungs)	4	yes	96	yes	Surgery, radiotherapy, chemotherapy, hypnosis and psychotherapy
Right testicle (metastatic carcinoma of lung)	1	yes	71	yes	Surgery, radiotherapy, Gerson diet
Adenocarcinoma of right breast	1	yes	67	yes	Surgery, radiotherapy, Gerson diet
Cervical and Upper Thoracic Intramedullary Glioma (spinal cord tumor)	1	yes	60	yes	Surgery, Gerson diet
Lymphoma	2	no	60	yes	Kelley diet
Spreading melanosarcoma	1	yes	52	yes	Surgery Gerson diet
Stomach cancer (metastatic carcinoma of the pelvis and bladder)	4	yes	48	no (heart attack)	Coley's toxins
Pancreas	2	no	48	yes	Adele Davis' antistress formula, vitamin C mega-doses, Kelly diet

Table 2 (continued)

Cancer	Record Class	Metastasis	"Regression ratio" (actual / expected survival times)	Alive at citation?	Treatment(s)
Cerebellar Pontine Angle Tumor (brain)	1	no	45	yes	Gerson Diet
Anaplastic squamous cell carcinoma (neck)	4	no	42	yes	Surgery, Hoxsey's herbs
Acute myelocytic leukemia	4	-	40	yes	chemotherapy, neuraminidase- treated leukemia cells, methanol extraction residue of BCG cell wall
Abdominal tumor (metastases to the groin and thighbone)	4	yes	40	no	Moerman diet
Hodgkin's disease	4	no	36	yes	Radiotherapy, chemotherapy, Hoxsey's herbs
Liver	2	yes	36	no (cause of death unknown)	Chemotherapy Kelley diet
Colon (metastases to liver)	2	yes	33	yes	Surgery, Kelley diet
Spleen (metastases to pancreas, lung and colon)	2	yes	32	yes	Kelley diet
Unknown, (metastatic carcinoma of stomach)	5	yes	30	yes	Moerman diet
Pancreas (metastases to small intestine)	3	yes	30	no (liver infection)	Surgery, Kushi macrobiotic diet
Kidney sarcoma	1	no	26	yes	Surgery, radio- therapy, Gerson diet
Basal Cell carcinoma (of skin below and posterior to right mastoid)	1	unknown	24	yes	Surgery, Gerson diet
Stomach	4	no	24	no (Asian flu)	Hoxsey's herbs
Brain	4	no	24	yes	Surgery, Gerson diet
Colon (metastasis to liver)	2	yes	24	yes	Surgery, chemotherapy, Kelley diet
Retroperitoneal lymphosarcoma	1	no	20	yes	Surgery, radio- therapy, spleen extract, Gerson diet
Uterus (metastases in ovaries and bladder)	2	yes	20	yes	Surgery, chemo- therapy, Kelley diet

cists, chemists or other scientists. This category seems of particular significance since it was assumed that such patients make the most reliable observers. One interesting case, that of Dr. Anthony J. Sattilaro,¹⁴ for example, involved complete regression of prostatic cancer, stage IV (D), which had metastasized to the skull, shoulder, spine, sternum and ribs. This regression occurred only after Sattilaro had begun eating a macrobiotic diet.

Cancer was known to have reoccurred in 13.0 percent of the patients in the sample, eventually being responsible for the deaths of 7.0 percent. In contrast, 171, or 85.5 percent, were still alive at the time of their citation. The remainder of the sample died of other causes. It was known that at least 57.5 percent had undergone one or more forms of conventional treatment at some time prior to their regression; chemotherapy being used in 15.5 percent; radiotherapy in 26.0 percent and surgery in 42.0 percent of the cases. In the overwhelming majority, however, this treatment had been perceived by all concerned as a failure and was subsequently followed by at least one unorthodox therapy. An additional 30.0 percent of patients had received no conventional treatment.

Unconventional therapy often included detoxification, through such processes as colonics, fasting, coffee and castor oil enemas and saunas. Detoxification, for example, had been used by 111 patients, that is some 55.5 percent of the sample. In addition, 175, or 87.5 percent, had made major changes to their diets. Table 3 lists foods which were typically avoided. As can be seen, canned, frozen and smoked foods were the least popular, being excluded from the diets of 80 percent of the sample. In addition, tobacco, meat and sugar were no longer used by 79.5 percent of patients who later had cancer regressions. Pickles, table salt (sodium chloride) and alcohol were also removed from the diets of 75.5 percent of cases. Spices, eggs, fish, oils and fats, tea, coffee, cocoa, chocolate, white flour, milk and nuts were also avoided by more than 50 percent of patients (Table 3).

In contrast, certain foods were consumed in large quantities (Table 4). The most popular foodstuffs proved to be fresh vegetables; namely carrots, beet roots, squash, broccoli, leeks, cauliflower, onions, legumes and brussel sprouts. With the exception of apples and pears, such vegetables were the only foods specifically eaten by more than 80 percent of the sample. Also of note were the 57 percent of patients who drank either freshly made apple or orange juice. Newly pressed carrot juice played a significant role in the diets of 53.5 percent of the sample; while grapefruit, grape and tomato juices were also drunk by over half of those experiencing regressions. Other foods that were popular included whole grains, alfalfa sprouts, cantaloupes, tomatoes, lentils, grapes and apricots.

As shown in Table 5, 129 patients or 64.5 percent of sample used some form of mineral supplements. By far the most commonly taken were potassium and iodine, which were added to their diets by 105 and 94 of the patients, respectively. Magnesium and sulphur were also used but less frequently; as were calcium, germanium, iron, manganese, phosphorus and selenium. The median length of time for which mineral supplements were taken was ten months; although their use varied from one to 96 months.

One hundred and eleven patients also took at least one vitamin supplement. As can be seen from Table 6, the most commonly used vitamins were niacin and vitamin B₁₂. Vitamins A and C were also very popular as supplements, as were digestive enzymes and bioflavonoids. Sixty-two patients also used one or more herbs to supplement their diets (Table 7), the most commonly taken being red clover (*Trifolium pratense*). This was used either in tea or capsule form by 34 individuals or 17.0 percent of the sample. It should be noted that herbs were usually taken in combinations and, therefore, may have synergistic properties.

It is obvious from this overview that spontaneous cancer regressions tended to occur most frequently in vegetarian non-smokers, who did not use

Table 3

Examples of the Frequency With Which Particular Foods and Drinks Were Deliberately Avoided by the First 200 Regression Cases

Type of Food or Drink	Percentage of Sample
All Canned Foods	80.0
All Frozen Foods	80.0
All Smoked Foods	80.0
White Sugar	79.5
Meat	79.5
Pickles	75.5
Table Salt (sodium chloride)	75.5
Alcoholic Beverages	75.5
Spices	75.0
Eggs	70.0
Fish	67.0
Fats	65.5
White Flour	65.5
Tea	65.5
Coffee	65.5
Chocolate	63.5
Oils	62.0
Milk	62.0
Nuts	59.5
Soy Beans	49.0
Tomatoes	38.5
Shellfish	16.0

Table 4

Examples of the Frequency With Which Particular Foods and Drinks Were Eaten by the First 200 Regression Cases

Type of Food or Drink	Percentage of Sample	Type of Food or Drink	Percentage of Sample
Broccoli	84.5	Grape Juice (freshly made)	55.0
Leeks	84.5	Tomato Juice (freshly made)	55.0
Cauliflower	84.5	Carrot Juice (freshly made)	53.5
Onions	84.5	Greenleaf Juice (freshly made)	51.5
Legumes	84.5	Liver	46.5
Carrots	84.5	Raisins	46.5
Brussel Sprouts	84.5	Almonds	32.0
Beet Roots	82.5	Pineapples	26.0
Squash	82.5	Cottage Cheese	24.5
Apples	81.5	Buttermilk	24.5
Pears	81.5	Eggs	24.5
Apricots	77.0	Wheatgrass	22.0
Whole Grain Cereals	75.0	Yogurt	21.0
Cantaloupe	73.5	Olive Oil	20.5
Grapes	73.0	Sunflower Seeds	19.5
Tomatoes	72.5	Barley Grass	18.5
Lentils	69.0	Avocados	18.5
Grapefruit Juice (freshly made)	58.0	Kefir	16.5
Alfalfa and other sprouted seeds	57.5	Garlic	14.0
Orange Juice (freshly made)	57.0	Flax Oil	7.5
Apple Juice (freshly made)	57.0	Miso	4.5
		Tamari	2.0

Table 5

Frequency With Which Mineral Supplements Were Taken by the First 200 Regression Cases

Type of Mineral	Percentage of Sample
Potassium	52.5
Iodine	47.0
Magnesium	10.0
Sulphur	6.0
Iron	4.0
Calcium	2.5
Manganese	2.5
Phosphorus	2.5
Selenium	2.5
Germanium	2.0
Copper	5.5
Chlorine	0.5
Strontium	0.5

table salt, white flour or sugar and who avoided canned, smoked or frozen foods. Typically such individuals eschewed alcoholic beverages, tea, coffee and cocoa, but instead drank freshly pressed fruit and /or vegetable juices. Many took vitamin and mineral supplements together with various herbs. The time spent by patients eating such special diets varied from one month to 15 years, the median time period being 41 months. Thirty-three patients or 16.5 percent of the sample also drank some form of herb tea, Jason Winters tea being the most popular¹⁵. Seventy-three individuals, that is 36.5 percent of the total, did not drink any water, obtaining liquids mainly from juices. Of the remainder, 18 percent restricted their use to distilled and 10 percent to spring water.

Discussion

Despite the title of this publication, there is really no such process as spontaneous regression. To cite Cole,¹⁵ "the term 'spontaneous' is an erroneous classification because there must be a cause of the regression". What is missing, therefore, is an understanding on the part of those involved of why a major improvement in health is occurring. A wide variety of possible explanations have, of course, been put forward for spontaneous regression. These include the stimula-

tion of the immune system in some manner, the elimination of carcinogens from the patient's environment, operative trauma, changes in hormone production, very late response to drugs or irradiation, and the beneficial effects of vaccines and fevers.^{4,5} Many unconventional physicians would argue that regression typically occurs when the body becomes more aerobic¹⁶ or after changes in the acidity of the blood following major alterations to diet or the use of certain herbs.^{17,18,19}

The preceding analysis tends to support the view that many regressions have occurred after dietary induced bulk and trace element changes. Sev-

eral patients treated by Gerson,¹² for example, appear in Table 2. The Gerson Therapy rests on the belief that cancer cells contain excessive ionized sodium, live by fermentation rather than oxidation, and are negatively charged electrically. For these reasons, he believed they do not have normal exchange with blood and serum and can therefore grow and spread. Gerson's treatment is a complicated one. The patient's entire life must revolve around it for a considerable time. Its first stage involves fast detoxification of the body, through the repeated use of enemas made from camomile tea, coffee and castor oil. Nourishment is provided by drinking freshly prepared juices, pressed from apples, carrots and green leaves. All these juices contain active oxidation enzymes, enriched by a 10 percent solution of potassium gluconate, potassium acetate and potassium phosphate. Juices must not be left in contact with the air, or subjected to changes in light or temperature. They must be drunk immediately after preparation. In addition, juice derived from fresh calf's livers and carrots is also drunk regularly. Every effort is made to ensure that the diet is as sodium-depleted as possible. It is also extremely potassium enriched.

A very wide range of substances is forbidden. These include tobacco, salt, sharp spices, tea, coffee, cocoa, chocolate, alcohol, refined sugar and flour, candies, ice cream, cakes, nuts,

Table 6

Frequency With Which Vitamin Supplements Were Taken by the First 200 Regression Cases

Type of Vitamin	Percentage of Sample
Niacin (B ₃)	33.5
Vitamin (B ₁₂)	33.5
Vitamin C	21.5
Vitamin A	18.5
Vitamin B complex	16.0
Bioflavonoids	12.5
Vitamin D	3.5
Vitamin E	3.5

Table 7

Frequency With Which Herbs Were Used by the
First 200 Regression Cases

Type of Herb	Percentage of Sample
Red Clover	17.0
Licorice	10.5
Poke Root	10.5
Stillingia	10.5
Cascara Amarga	10.5
Prickly Ash Bark	10.5
Burdock Root	10.5
Buckthorn Bark	10.5
Berberis Root	10.5
Aloe Vera	10.0
Chapparal	6.5
"Herbaine"	6.5

mushrooms, soy beans, pickles, cucumbers, pineapples and all berries with the exception of red currants. The diet also rejects canned, frozen, smoked, salted, dehydrated, powdered or bottled foods. Gerson¹² provided detailed instructions on how to prepare vegetables and make nutritious drinks. Even the type of grinder and juice extractor were especially selected to avoid exposure to oxygen and electromagnetic influences during juice preparation. His major aim was to remove as much sodium from the patient's body as possible, replacing it with potassium. In addition, iodine, thyroid and lugol solution was given, in an effort to encourage the cancer mass to absorb potassium and oxidizing enzymes. These he considered would kill it.

Gerson's Therapy must drastically alter the mineral balance of the patient's body. Anyone undertaking this treatment would rapidly lose sodium, while at the same time potassium and iodine body levels would rise. In addition, since calf's liver juice is rich in vitamin A and selenium, the intake of these substances would also increase. Milk, cheese, and butter are forbidden, especially during the first month, for this reason the diet is perhaps fairly low in calcium. Since drinking water is generally avoided, any local mineral imbalances in supply

would be of far less significance than normal during treatment. The emphasis on fresh fruits and vegetables also means that the patient received high levels of anti-oxidants, especially betacarotene and vitamin C.

Numerous other regressions also appear associated with major dietary changes that must have influenced blood and serum trace and bulk element levels (Table 2). Several regressions, for example, occurred after patients had switched to Kelley's,¹⁸ Moerman's,⁸ or to macrobiotic diets.¹⁹ Followers of the macrobiotic lifestyle, such as Aihara,²⁰ for example, argue that healthy blood is slightly alkaline, having a pH of 7.4. One of the major goals of macrobiotic diet is to keep this pH level constant. Aihara provides the pH levels of the wide variety of foods in his book *Acid and Alkaline*²⁰ and lists elements such as sulphur, phosphorus, chlorine and iodine which he says increase the body's acidity. Sodium, potassium, calcium, magnesium and iron are thought to restore alkalinity. Aihara therefore provides details of a wide range of foods, listing their average calcium, phosphorus, potassium and sodium contents. Calcium and phosphorus, and potassium and sodium ratios are calculated, as is a value that consists of the food's potassium level minus its sodium content. Foods are then classified into four

groups according to their sodium, potassium, calcium, magnesium, phosphorus and sulphur levels. Yin acid-forming foods are high in phosphorus and sulphur and sodium; yang acid-forming foods are high in phosphorus, sulphur and sodium. Yin alkaline-forming foods contain significant potassium and calcium, but not phosphorus and sulphur; while yang alkaline-forming have elevated sodium and magnesium levels but are low in phosphorus and sulphur. The "ideal" macrobiotic meal therefore consists of four components, yin and yang acid-forming, and yin and yang alkaline-forming foods. For example, yin acid-forming foods are exemplified by tuna and rice, while yang alkaline foods include miso, wakane, and lotus root. The objective of a good macrobiotic meal, therefore, is balance, while the extra chewing which results from the mixing of the food with the alkaline salivary enzyme ptyalin, is thought to reduce excess acidity, even in acid grains. People who have eaten animal foods for a long time are considered to have high blood acidity and require foods to increase alkalinity. The macrobiotic treatment for cancer and a wide range of other illnesses, therefore, really consists of avoiding highly acid or alkaline substances and manipulating diet to produce what is considered to be the optimum blood pH level. In the process, blood and serum levels of sulphur, potassium, iodine, sodium, magnesium, phosphorus and calcium are also deliberately manipulated.

Michio Kushi in *The Macrobiotic Approach to Cancer*²¹ identified three major groups of cancer. He argued that more yin cancers are associated with the overeating of foods such as sugar, fruit, dairy products, oil, flour, alcohol, coffee, honey and other sweets, potatoes and tomatoes. Such yin cancers are thought to include those of the breast, stomach, skin, mouth (except the tongue), esophagus, leukemia, Hodgkin's disease and outer regions of the brain. More yang cancers, such as those of the colon, prostate, rectum, ovary, bone, pancreas and inner regions of the brain are thought to be promoted by the re-

peated over-consumption of foods such as meat, salt, eggs, hard cheeses, poultry and fish. Kushi also argues that diets that are excessive in both yin and yang foods can result in cancer of the lung, bladder, uterus, kidney, spleen, tongue and melanoma.

While my own factor analysis of the distribution patterns of cancer in the United States and elsewhere does not confirm these specific groups,⁷ there appear to be some strange parallels between the beliefs of those who support macrobiotic diet and the geographical evidence presented elsewhere. Both suggest that the location of the primary tumor varies with bulk and trace element imbalances in diet. In addition, each provides evidence that elevated sodium intake may be highly detrimental, while iodine and potassium are often beneficial, at least in reducing mortality from some specific cancers.

In summary, many of the more dramatic cases of spontaneous cancer regression cited in Table 2 seem to have occurred in association with major dietary changes, which must inevitably have resulted in alterations in the availability of bulk and trace elements to both the immune system and to tumors. Many of the elements involved, including sodium, potassium, magnesium, phosphorus, calcium, selenium and iodine are amongst those identified by this author, by geographical analysis, as perhaps being significant in carcinogenesis. Nonetheless, despite the enormous interest in conventional medicine about the role of diet in preventing cancer,^{22,23} there is virtually no discussion of its possible roles in treatment.²⁴ One exception appears to be work undertaken at the Methodist Hospital in south Philadelphia. The major stimulus for this research, into the impact of diet on survival rates, was apparently the regression experienced by Dr. Anthony Sattilaro,¹⁴ the Chief Executive Officer of this hospital. According to one of the physicians in charge of this project, results have been very unpredictable. "Some patients are doing well (on a

macrobiotic diet), some are doing terribly, many have died."²⁵

The current author has undertaken no research on vitamins or herbs in the genesis or treatment of cancer. However, since so many vitamins and minerals are synergistic, if mineral imbalances can be manipulated to stimulate regression, then vitamins must be involved. It should be pointed out that many of the diets associated with spontaneous regressions were extremely rich in beta carotene and in vitamin C, because of their emphasis on fruits and vegetables. It is also clear from Table 7 that several herbs may

"Despite the title of this publication, there is really no such process as spontaneous regression. to cite Cole, 'the term 'spontaneous' is an erroneous classification because there must be a cause of the regression". What is missing, therefore, is an understanding on part of those involved of why a major improvement in health is occurring."

have been associated with numerous regressions. Interestingly enough, it is possible that there may be a link between some of these herbs and bulk and trace element levels in the body. Dr. Alejandro Lugo, the former chief physician of the Bio-Medical Center in Tijuana, Mexico considered Hoxsey's herbs, which included many of those in Table 7, to be a form of chemotherapy that changes "the metabolism of the body, extracting large amounts of sodium from the cells, and introducing potassium and iodine".²⁶

Conclusion

Recent literature reviews of the impact of nutrition on cancer causation and prevention^{22,23} suggest that proteins,

lipids and carbohydrates have some cancer stimulating properties. In contrast, vitamins A, C, E and the mineral selenium appear protective.²² Although the epidemiological and animal evidence is weaker, other micronutrients including folic acid, manganese, molybdenum, copper, the amino acids phenylalanine and methionine and the lipotrope choline may reduce the incidence of certain cancers. While the data are contradictory, vitamins B₁, B₂, B₆, B₁₂, pantothenic acid, iron, iodine and zinc may also be protective²³. Geographical analysis by the current author⁷ tends to suggest that this list is incomplete and that sodium, potassium, calcium, magnesium, phosphorus, strontium, mercury and barium may also have had either, or both, anticarcinogenic or cancer promoting properties.

The U.S. National Cancer Institute and the Canadian Cancer Society^{27,28} are promoting diets that they anticipate will reduce the incidence of cancer. Interestingly enough, many of the 200 patients who experienced regressions had diets that were extreme forms of those now being championed by orthodox medicine. The parallels are so marked, and the links with the geographical distribution patterns so intriguing, that the potential role of diet in the treatment of cancer appears to merit far greater attention than it is currently receiving.²⁴ ■

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References

1. Siegel, B.B. "Love, Medicine and Miracles", Harper and Row, New York, 1986.
2. Nossal, G.J.V. Spontaneous Regression of Cancer: Summary and Profile for the Future, *Conference on Spontaneous Regression of Cancer*, U.S. Department of Health, Education and Welfare, Public Health Service, National Institutes of Health, Monograph 44, 1976. Department of Health, Education and Welfare Publication No. (NIH) 76-1038, 145-148.
3. Bashford, E.F. cited by Rae, M.V. Spontaneous regression of a hypernephroma. *Am J Cancer*, 24:839, 1935.
4. Everson, T.C. and Cole, W.H. "Spontaneous Regression of Cancer", Saunders, Philadelphia, 1966.
5. Cole, W.H. "Opening Address: Spontaneous Regression of Cancer and the Importance of Finding its Cause", *Conference on Spontaneous Regression of Cancer*, *op cit*, 5-9.
6. Burnet, F.M. cited by Glassman J. "The Cancer Survivors and How They Did It" Dial Press, New York, 1983, 211.
7. Foster, H.D., Reducing Cancer Mortality: A Geographical Perspective, *Western Geographical Series 23, University of Victoria, B.C. 1986*.
8. Norie, I.H. and Foster, H.D., Water Quality and Cancer of the Digestive Tract: The Canadian Experience. *Proceedings, Third International Symposium in Medical Geography*, Queens University, Kingston, Ontario, August 7-12, 1988, 91-101.
9. Evans, A.E., Gerson, J. and Schnauffer, L. Spontaneous Regression of Neuroblastoma, *Conference on Spontaneous Regression of Cancer*, *op.cit.*, 49-54.
10. Glassman, *op.cit.*, 217.
11. Chase, A.W. "Dr. Chase's Third, Last and Complete Receipt Book and Household Physician", F.B. Dickerson, Detroit, 1888.
12. Gerson, M. "A Cancer Therapy: Results of Fifty Cases & The Cure of Advanced Cancer by Diet Therapy", (Gerson Institute, Bonita, CA, 1986).
13. End Results Section, Biometry Branch, National Cancer Institute, *End Results in Cancer; Report No. 4*, cited by Tobe, J.H., "How to Prevent and Gain Remission from Cancer" (Provoker Press, St. Catharines, Ontario, 1975).
14. Sattilaro, A.J. with Monte, T. "Recalled to Life" (Avon, New York, 1984).
15. Winters, J., "In Search of the Perfect Cleanse", (Vinton, Las Vegas, NV, 1984).
16. Donsbach, K.W., "Hydrogen Peroxide, H₂O₂", (Alive Books, 1987).
17. Tobe, J.H., *op.cit.*
18. Rohe, F. "Metabolic Ecology: A Way to Win the Cancer War", (Wedgestone Press, Winfield, Kansas, USA, 1983).
19. Kushi, M. (ed.) "Cancer and Heart Disease: the Macrobiotic Approach to Degenerative Disorders", (Japan Publications, Tokyo, 1985).
20. Aihara, H., "Acid and Alkaline", (George Oshawa Macrobiotic Foundation, Oroville, CA 1986).
21. Kushi, M. "The Macrobiotic Approach to Cancer", (Avery Publishing, Wayne, NJ, 1982).
22. Cohen, L.A., Diet and Cancer, *Scientific American*, 257(5):42-48, 1987.
23. Leonard, T.K., Mohs, M.E., Ho, E.E., and Watson, R.R., Nutrient Intakes: Cancer Causation and Prevention. *Progress in Food and Nutrition Science*, 10:237-277, 1986.
24. Committee on Diet, Nutrition and Cancer, Commission on Life Sciences, National Research Council, National Academy of Sciences, "Diet, Nutrition and Cancer: Directions for Research", (National Academy Press, Washington, D.C., 1983).
25. Donze, cited by Glassman, J., *op.cit.*, 176.
26. Lugo, A., cited by Glassman, J., *op.cit.*, 180.
27. Ross, W.S., "At Last, An Anti-Cancer Diet", *Reader's Digest*, 1222(733):49-53, 1983.
28. Canadian Cancer Society, "Facts on Cancer and Diet: Your Food Choices May Help You Reduce Your Cancer Risk", 1985.

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