Ray Peat's Newsletter

It is more important to know what sort of person has a disease than to know what sort of disease a person has. **Hippocrates**

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Comments on cancer therapy

Paranoia is an irrational belief that powerful forces are trying to harm you. It's likely that at least as many people suffer from its opposite, "trustanoia," an irrational belief that those in power are working for your benefit. Authoritarianism involves irrational trust of "the authorities." Schools often have "trust-building" activities for their students. "When they say 'in the national interest' they are thinking about us." "The health care system cares about my health." Many institutions lack transparency. In this setting, normal curiosity and skepticism about important events, ranging from a medical diagnosis to foreign policy, are likely to be discouraged. The mystique of medical authority, especially in relation to the diagnosis and treatment of cancer, involves a profound degree of faith by the public.

Around 1800, university-trained doctors "restored balanced health" in their patients by bleeding them, making them vomit, blistering them and giving them large doses of mercury to cause purging and diuresis. These official methods produced quick results, but sometimes the result was death, so the practice was known as "heroic medicine." Apparently the public wasn't as heroic as the doctors, because large numbers of people began relying on herbalists, midwives, and "Indian doctors" for their health care. To protect their income, the upper-class doctors got the states to pass legislation outlawing those more popular practices, but those laws didn't last long, and by the middle of the 19th century scientific medical ideas imported from Europe were being combined with traditional folk medicine in several competing schools of medicine. However, because competition kept doctors' earnings low, organizations of doctors managed to get licensing boards established in every state by the end of the century to limit the number of practicing doctors. Their influence over government, with the assistance of the Carnegie and Rockefeller foundations, allowed them to eliminate colleges that taught a variety of alternative medical methods.

During the centralization of medicine and its fusion with the power of the state, the cellular theory of disease and the gene theory of life had become prominent, and determined what could be taught in the licensed medical schools, and controlled the types of investigation that would be subsidized by the government. The cellular theory of disease indicated that cancer consisted of bad cells, and the gene theory indicated that the badness of cells was irreversible, meaning that cancer could be cured only if every bad cell was killed. This provided a rationale for the return of heroic medicine to treat cancer.

The US government knew that chemical warfare wasn't favored by the public, but from 1916 on it was supporting research in the development and production of toxic gases of many types, and during the second world war it added research in biological and radiological warfare to its unpublicized activities. When the Manhattan Project came to an end after the war, the government created new projects to keep their people working, for example institutes of molecular biology, creating the techniques for "genetic engineering" of organisms. In an article titled "From chemical warfare to breast cancer management," Elwood V. Jensen described his transition from designing military toxins to defining how estrogen produces its effects in cells. Military and medical research have been deeply intermingled, with the national weapons laboratories deeply

involved in the study of cancer and its relation to radiation, toxins, bacteria, viruses and hormones.

Besides the existence of classified military research in universities, for undeclared purposes, an important issue is that the unique support the government can provide (which in Jensen's case, was radioactive isotopes that weren't available to other researchers) turns science into a private matter, whose claims can't be verified. As a doctrine becomes "official," evidence disproving the claims is sidelined, and the medical application of alternative approaches becomes illegal.

Under the system of medical licensing and government controlled financing, the idea of "getting a second opinion" has limited value; for example, the insurer might require a referral to a doctor within a specific group, keeping it within the system of doctors with predictable opinions.

Limiting the number of doctors was very effective for increasing their income, but increasing the number of diagnosed diseases per patient is also very effective. By expanding the definition of diabetes, the sale of drugs increased tremendously, with only moderate harm to the patients. Starting in the 1940s, "pre-cancerous" conditions became "carcinoma in situ," and mass media campaigns warned the public to watch for changes in moles or in bowel functions, because having surgery in time would save your life.

Despite the escalation of diagnosis, cancer deaths increased. While watching for changes in moles, deaths from melanoma increased five-fold. In the 1980s, a protein, the so-called prostate specific antigen, PSA was identified as a possible indicator of the presence of prostate cancer, and it became popular as a way to diagnose prostate cancer, with the result that many symptom-free men were given prostate biopsies and treatment for prostate cancer and the mortality rate increased sharply from 21/100,000 population in 1981, before PSA was known, to 30/100,000 in 1992. At that time (and for the preceding 30 or 40 years) estrogen was the most popular treatment for prostate cancer, so it was probably an important factor in the suddenly increased death rate.

There have been several studies of the effects of x-ray mammography screening on women's health and mortality. When some of the authors have concluded that there is either no decrease in mortality from that screening, or a very small decrease, but a very significantly harmful effect on the women's health, they have been furiously denounced by the cancer specialists, who say that people who aren't specialists in treating cancer have no right to say such things. The specialists apparently still believe that over-diagnosis isn't a big problem, and that very large numbers of deaths (e.g., 28%, Weedon-Fekjær, et al., 2014; 15%, but with 30% over-diagnosis, Gøtzsche and Jørgensen, 2013) are prevented by mammography. The women who have been screened seem to be even more enthusiastic than the oncologists about the number of lives the mammograms save, guessing 80 times as many as estimated in three studies (Gotzsche and Jorgenson, Independent UK Panel on Breast Cancer Screening, and Miller, et al.). That illustrates the success of the "cancer awareness" "early detection" marketing campaign. By its effects, we could call it a disinformation campaign.

In Japan in 1974, a mass screening of babies for neuroblastoma, the most common fatal tumor of children, was begun, based on the detection of a chemical in the urine that is produced by the tumor. It was extremely reliable, permitting tumors to be removed at an early stage before they produced symptoms. By the late 1990s, though, the number of deaths from neuroblastoma hadn't decreased. The implication of the experience is that many tumors are transient, regressing spontaneously, and that the doctrine of preventing cancer death by early diagnosis was based on mistaken beliefs about the nature of cancer. It has been known for decades that nests of cancer cells exist in everyone after about the age of 50, but most of them are never noticed. Like neuroblastomas, most types of cancer probably come and go, depending on the general state of the health.

Several studies have mentioned that overdiagnosis causes unnecessary treatments, for example (Bleyer and Welch, 2012): "And although no one can say with certainty which women have cancers that are overdiagnosed, there is certainty about what happens to them: they undergo surgery, radiation therapy, hormonal therapy for 5 years or more, chemotherapy, or

(usually) a combination of these treatments for abnormalities that otherwise would not have caused illness." This is more than an inconvenience; people sometimes die from chemotherapy and radiation, and something that cancer doctors often forget to tell their patients is that cytotoxic chemotherapy causes brain damage, reduction of the volume of grey matter (Koppelmans, et al., 2012). How much collateral damage is acceptable?

In the US between 1930 and 2000, despite changing treatments and increased efforts for early diagnosis, the death rate from breast cancer changed very little, but when women immigrated from countries with a low incidence, their rate increased greatly after just ten years, and the incidence in their daughters was the same as that of the general population of the US. The way people live makes a big difference, treatment, very little difference.

It seems likely that the only thing that has reduced the real death rate from breast cancer was the great decrease in the use of estrogen, after the results of the Women's Health Initiative were published in 2002, revealing that the health claims about estrogen had been false. Immigrants from Latin America and Asia, with a low incidence of breast cancer, have also (probably temporarily) lowered the average mortality from that cause.

There have been a few studies that examined the delay between a diagnosis of cancer, and the treatment, or between symptoms and treatment, and some of them found that delay didn't affect survival, or that it even increased the survival rate (Holmäng and Johansson, 2006; Bozcuk, 2001; Dennis, et al., 2000; Park and Lees, 1951; Jones, 1956). These studies have usually elicited vehement responses from surgeons.

On average, there is a delay of just a few weeks between diagnosis and surgical treatment of cancer, but occasionally the surgeon finds that there is no tumor in the organ when it is removed. For example, six weeks after a colon cancer was identified by colonoscopy, the ascending colon was removed, and only a scar was found at the tumor site (Kihara, et al., 2015). If it's common for tumors to grow and regress in relation to influences such as seasonal changes in the diet and hormones, a shorter delay between diagnosis and treatment will increase the apparent life-saving benefit of treatment, at the same time that it leads to underestimation of the frequency of spontaneous regression.

Spontaneous regressions are seen in all types of advanced malignant tumors (Ghatalia, et al., 2016). In a study of people whose kidney cancer had metastasized to their lungs, treatment with interferon, to stimulate their immune system, was compared to placebo (Elhilali, et al., 2000). There was complete remission in 4% of those treated with interferon, and in 6% of those given the placebo.

To judge the meaning of 6% complete remission in metastatic cancer, we can compare the percentage of complete responses to medical treatments seen over a period of 50 years, in all kinds of advanced solid cancer: Regardless of the type of cancer or the type of treatment used (surgery, chemotherapy, radiation, immune stimulation, etc.), the rate of complete response has averaged 7.4% (from 5% to 10%). "This remarkable concordance of CR rates regardless of cancer or therapy type remains currently unexplained, and motivates further investigation" (Ashdown, et al., 2015; Coventry and Ashdown, 2012).

There is a clear seasonality in the diagnosis ("occurrence") of breast cancer, with a maximum in the spring and a minimum in the fall (Cohen, et al., 1983). The increased discovery in the spring coincides with rising gonadotropins (which are associated with breast and prostate cancer), and the decreased discovery in the fall coincides with higher vitamin D and lower stress hormones. The seasonal effect is more distinct at high latitudes and in rural areas, showing that day length is a major factor. For a given length of time between diagnosis and treatment, the chance of observing a spontaneous remission is probably greater in the summer or fall, when the cancerization tendency has waned.

Because of the ruling ideology about the nature of cancer (and about cells and organisms), when a cancer is identified, it is only the cancer that is treated, not the patient. If the person has been living in a way that allowed the tumor to develop to the degree that it could be noticed,

continuing that way of living is likely to keep encouraging tumor growth, but occasionally the organism will react to its experiences in a way that allows the tumor to change into normal tissue or to disappear in some other manner.

Having defined the tumor as alien to human life, the contemporary "evidence based" version of heroic medicine is to choose treatments by applying a particular technique, or combination of techniques of cell destruction to a sufficient number of people with a specific variety of cancer to be able to statistically demonstrate the method's efficacy, or lack of efficacy. The funding of that sort of study is based on the understanding that an effective product can be massively put into the system for routinized but very profitable application.

The nature of cancer's cause has to be confronted. The gene-controlled, cell-centered description of biology, of life and disease, is built into our economy, so there will be no public acknowledgment of the absolute failure of the doctrine of the "cancer virus/oncogene/random mutation" cause that is behind the official treatments of cancer.

If cancer is seen as an event in the body's developmental and adaptive processes, the important issue is to understand the process so that the reaction can be changed, reducing harmful factors and supporting the adaptive and corrective factors.

The idea of "field cancerization" is very old, and has been based on simple microscopic observation of a tumor in its natural setting, noticing that there are changes in the way the cells are organized, and that there are less extreme changes in the non-cancerous adjoining tissues. The original observations preceded the development of the "gene" doctrine.

The argument against it is that it isn't consistent with the doctrine that the persistence of cancer is based on a change of the genes, and that the cancerizing mutation must be a random event in a single cell, which has multiplied until a tumor can be detected. The doctrine says that if a group of cells are similar to each other, it's because they are descendants of a single cell, i.e., a clone. The proponents of this idea of rigid genetic determinism in development have made great efforts for more than 100 years to suppress information about flexibility in the organization of tissues and chromosomes. It was that culture, for example, that led Barbara McClintock to stop her work on adaptive changes in the genome. The "official" biology taught in schools and universities stopped being a science, to concentrate on ideas that were compatible with engineering and marketing.

Cells communicate in many ways. Like bacteria, which can pass antibiotic resistance genetically to susceptible strains of bacteria, human cells of different types are able to communicate with each other by passing proteins, nucleic acids, and even mitochondria. Microvesicles, containing these macromolecules, shed from cells in various organs can travel through the body fluids, to be taken up by bone marrow cells, causing those cells to take on the properties of the cells that shed the vesicles. The abnormal and stressful conditions in a tumor increase the shedding of vesicles, which are probably involved in a tumor's ability to recruit other cells into the abnormal structure, but the effects of the locally disturbed metabolism create imbalances between stimuli and the ability to respond, so that even healthy cells in the tumor become unable to normalize the organization.

In the tissues of the "cancer field," inflammation and fibrosis are processes that precede and accompany carcinogenesis, so all of the knowledge that relates to the development and resolution of inflammation and fibrosis is relevant to understanding and controlling cancer. To approach a specific person's specific problem, we need the best knowledge about how an organism's history and present situation affect its ability to adapt to new situations, as well as knowledge of the therapeutic resources that are available, and since this kind of knowledge hasn't been institutionalized, it has to be sought and organized by each interested person.

In the 1970s, Carl Simonton demonstrated that a cancer patient's attitude and activity affect the length of survival as well as quality of life. Our culture has made a cancer diagnosis a sort of "inescapable stress," leading to "learned

helplessness," and Simonton's study and animal studies show that an experience of control, of efficacy in the environment, can overcome learned helpless and increase the body's ability to reject a tumor (Sklar and Anisman, 1979).

The cholinergic dominance of the state of learned helplessness increases the formation of substance P, a small peptide molecule that produces the sensation of pain, and probably itching. Many types of cancer cell are known to produce substance P. Prolonged brain stimulation leads, in "resilient" individuals, to the accumulation of a transcription factor (DeltaFosB) that decreases the stress-induced release of substance P and reduces depression-like behaviors (Berton, et al., 2007).

I think the "resilience" factor probably involves a developmental predominance of the sympathetic/adrenergic system, over the parasympathetic/cholinergic system. In a summary of his 39 years of research, Y. Kuraishi (2015) said that noradrenaline inhibits pain by inhibiting the release of substance P and glutamate (the excitatory amino acid), and that "the suppression of cancer pain results in the inhibition of tumor growth and lung metastasis...," apparently by inhibiting the release of substances from cancer cells (e.g., ATP, endothelin-1, and bradykinin). Things that activate and enliven the patient, and that at the same time decrease pain, seem to be therapeutically appropriate.

Currently, the mass media are publicizing the "limitless potential" of the "new individually tailored approach that targets tumors individually by analyzing their genes." In the 1960s and '70s, the "genetic uniqueness" of each tumor was seen as a problem that might be approached by growing samples of each tumor in tissue culture, and testing their susceptibility to various methods of killing, so that the patient could be spared the exposure to ineffective treatments. Starting in the 1980s, several companies developed tests of that sort. In 2010, "In . . . the largest retrospective study of a chemoresistance assay, there was no clinically useful information gained from resistance testing in the primary setting" (Ferris and Rice, 2010; Matsuo, et al., 2010). Testing tumor cells *in vitro* seemed logical, because of their belief that cancers are essentially different from human tissue, but they failed to understand that *in vivo*, the behavior of tumor cells varies according to their location within the tumor and within the person's body. The current ideology of identifying "tumor individuality" makes the same mistake of hypostatizing the tumor, thinking of it as a concrete entity, rather than as a process.

The idea of individualized therapy is good, except that it is the individuality of the person, not of the disease, that is important. Each person has a unique history and a unique situation, which must be understood if the disease is to be overcome. For example, each person has a unique intestinal flora, a unique combination of fatty acids that changes from day to day, and unique ways of maintaining a balance of oxidation and reduction processes in response to stresses.

This way of viewing the cancer problem implies a different approach to health care, in which the patient's perceptions guide the process, because the patient is in the best position to know whether something is helping or hurting. In the present system, the effectiveness of a treatment is determined by whether the lump is getting smaller or not—and the well-being of the patient sometimes serves as a negative sign: If the white blood cells haven't declined dangerously, and if the hair isn't falling out, the treatment must be intensified. Still, many patients fully trust the system. The authoritarian educational system has created a more heroic public.

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