Cancer: An Historical and Cultural Perspective

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Recommended Citation
Cancer is both an ancient and modern disease. Identified and named in antiquity, yet it remains a scourge of more developed societies. Its origins, Sorkin (2009) hypothesizes, might lie in the very control mechanisms that arose early in evolution as individual cells began to come together in multicellular communities. To Sorkin, this allowed the evolutionary advantage of specialization and increasing complexity. However, it would necessitate a biological mechanism that would control the reproduction of these now specialized cells. Sorkin suggests that cancer emerges when this control mechanism fails.

Cancer was clearly evident early in history. Egyptian mummies offer evidence of osteosarcoma (bone cancer). The two earliest medical documents, the Edwin Smith papyrus (ca. 1600 BC) and the Ebers papyrus (ca. 1550 BC), both describe it. Hippocrates, often considered the father of medicine, was the first to name it carcinos and carcinoma—names that the Roman physician Celsus, three centuries later, translated into the Latin equivalent cancer, for crab. It is open to conjecture as to why Hippocrates named the disease after the crab. It may have referred to the crab-like shape of tumors he observed, the similarity of the pain to a crab bite, or perhaps to the tenacity of the disease's spread. Later, Galen, another prominent Roman physician, used the term oncos (a root for the term oncology), from the Greek term for swelling, to describe these cancerous tumors (Olson, 1989).

While cancer's roots are ancient, it is in many ways a disease of development. It is a disease of both an aging society and an industrial economy. Only with a requisite level of development can the population reach an age to be more likely to contract cancer. Only with a society that is able to eradicate many acute diseases and control epidemics can populations survive to develop cancer. Medical care has to be at a level that can recognize and diagnose cancer. Industrialized societies also provide the diets, habits, and exposures
to carcinogenic chemicals and pollutants that increase the risk and rates of cancer.

In the United States, those conditions were not fully in place until the late 19th century. At that time, the death rates from cancer began to increase. However, there was still one event beyond these rising rates that would focus attention on this emerging illness. Just as Rock Hudson's death and Magic Johnson's diagnosis of HIV infection increased public awareness of AIDS, the copious and melodramatic press accounts of former President Grant's battle with throat cancer and his death in 1885 galvanized public attention on cancer (Patterson, 1987). The American population was then well aware of cancer and deeply dreaded the disease, causing a sense of fear and shame superseded in more contemporary times only by AIDS.

HISTORICAL PERSPECTIVES ON CANCER CAUSATION, TREATMENT, AND PREVENTION

Causation
Cancer is a complex disease or, in reality, a set of more than 150 distinct diseases. This complexity confounded understandings of causation, treatment, and prevention. In the prescientific era, causation was generally viewed as the result of a curse, the will of God, Karma, or the nature of fate. However the earliest developed medical histories did attempt to account for cancer. One of the earliest medical theories was Hippocrates's humoral theory. Hippocrates suggested that the body contained four basic humors, or body fluids: blood, phlegm, black bile, and yellow bile. Any imbalance of these humors caused illness. Cancer thus was caused by an excess of black bile in a given area or part of the body. Hippocrates's work was well accepted until the Renaissance. Then other theories emerged suggesting cancer was caused by degenerating lymph, irritation, proposed cellular material labeled blastema that arose from normal tissue, or even from parasites—an idea that won a Nobel prize in 1926 (Olson, 1989).

It was basic scientific work that began to unlock the secret of cancer. Rudolph Virchow, the father of cellular theory, demonstrated that cancer cells derived from other cells in the body. Watson and Crick, in discovering the chemical structure of DNA, created a basis for contemporary understandings of cancer causation. This allowed the identification of oncogenes, or mutated genes that cause cells to grow uncontrollably, and tumor suppressor genes that slow cell division, eliminate cells, and repair DNA errors. We now understand
that a range of factors—including chemicals, radiation, viruses, and genetic factors—can stimulate oncogenes and inhibit tumor suppressor genes, leading to cancer.

**Treatment**

The earliest references to cancer note treatment from a *fire drill*—a likely reference to attempts to cauterize the tumor (Olson, 1989). However, even in the Edwin Smith papyrus, the pessimism that still surrounds cancer was evident. There was, the document confirms, no treatment. Both Hippocrates and Galen concurred that the disease was incurable.

However, Galen recognized the possibility that the total surgical removal of the tumor could cure breast cancer, provided the disease had not spread. Unfortunately, the early state of surgery—without anesthesia or antiseptics—often brought death as an inevitable complication of surgical treatment. However, with the development of anesthesia in 1846, cancer surgery could begin to progress. Conscious of the fact that tumors tended to spread, pioneer cancer surgeons such as Bilroth, Halstead, and Hanley suggested that the entire tumor be removed as well as any lymph glands in the area where the tumor was located. These extensive operations often resulted in amputations and mutilation that made cancer surgery as feared as the disease.

Stephen Paget, an English surgeon, advanced the understanding of the process of metastasis, or the spread of cancer. Paget hypothesized that cancer cells were carried throughout the bloodstream but would only grow in certain organs, much like seeds could only grow in compatible soil. This understanding, later confirmed by advances in cellular and molecular biology, allowed a more specialized approach that combined less invasive surgery with other approaches such as radiation therapy, hormonal therapy, and chemotherapy. Recently, additional approaches such as ultrasound, magnetic resonance imaging (MRI), positron emission tomography (PET) scans, and computed tomography (CT) have minimized the need for exploratory therapy. Other techniques such as endoscopy, laparoscopic surgery, and thorascopic surgery allow the removal of tumors through tubes inserted through body orifices or openings created by small incisions, further minimizing the need for invasive procedures. In addition, cryotherapy, lasers, and radiofrequency ablation use extreme cold or heat to destroy cancer cells, and hold promise for future surgical treatment.

In addition to surgery, other therapies also were developed to treat cancer. In 1896, a German physicist, Wilhelm Roentgen, discovered the X-ray. Within
3 years, X-rays were being used for both diagnosis and cancer treatment. However, it was soon realized that the X-rays could both cure and cause cancer: many radiologists used their own arms to test the strength of the ray, and some of them later developed leukemia. As with surgery, the challenge has been to focus the X-ray on the cancerous cells while trying to avoid radiating healthy cells. Technological developments have allowed more carefully focused X-rays and use of chemical modifiers that make cancer cells more sensitive to radiation.

Chemotherapy began later. During World War II, army scientists, trying to develop protective methods against mustard gas, discovered that the compound nitrogen mustard could kill cancer cells by damaging the DNA of such cells. Soon other drugs were found that could interfere with the replication and growth of cancer cells. Chemotherapy has been found to be an effective cure for some forms of cancer as well as a way to control the disease, extending life when cure is not possible. Moreover, chemotherapy has been used in adjuvant therapy, that is, in combination with surgery and/or radiation to kill cancer cells that might have spread beyond a localized area.

As with other approaches such as radiation and surgery, the objective of chemotherapy is to kill cancer cells with the least possible damage to other cells or other problematic side effects. For this reason, there is continued development of use of multiple chemotherapeutic agents; new ways to deliver drugs, such as liposomal therapy (which delivers chemotherapy inside liposomes, a fatty coating, to both decrease side effects and better target medications); and other techniques to target chemotherapy or to enhance the immune system and augment normal biological functions to resist cancers.

The treatment of cancer has been an incredible success story given the centuries that the disease was considered inevitably fatal. In many ways, that success was due to an unusual partnership between medicine and government—itself a testimony to the efforts of the American Society for Control of Cancer, renamed in 1944 as the American Cancer Society. Under the leadership of Clarence Cook Little, the American Society for Control of Cancer mobilized women's clubs and the media to encourage the federal government to take an unprecedented role in funding cancer research. This effort led to both the establishment of cancer control as the number one health initiative and the development of the National Cancer Institute. This success was the result of the confluence of a number of factors. First, the New Deal administration had an activist view of government. Second, the American
Society for Control of Cancer had a carefully nuanced message. Part stressed fear: Cancer could strike anyone at any time. Yet, the fear was tempered with a sense of optimism: Cancer could be treated, possibly even cured; funds would not be wasted. Finally, the American Society for Control of Cancer was able to unify—with the possible exclusion of some unorthodox clinicians, medical researchers, and patient and family groups—major organizations in cancer research and advocacy and other stakeholders such as pharmaceutical companies in one common cause (Doka, 1997).

Cancer has remained a major health priority, so much so that in 1971, then-President Richard Nixon declared “war on cancer.” This resulted in the National Cancer Act of 1971, which increased funding for cancer research and gave the National Cancer Institute special autonomy within the National Institutes of Health. Even now there is a Senate bill—the 21st Century Cancer Access to Life-Saving Early Detection, Research, and Treatment (ALERT) Act, introduced by Senators Kennedy and Hutchison—that seeks to increase funding for early detection and treatment. Despite these considerable efforts, success is mixed. While cancer remains a major source of mortality, there have been declines in cancer deaths for all age groups, with younger populations benefitting most. Moreover, the rates are uneven. There has been great success in treating certain cancers such as lymphoma and leukemia, while other cancers such as lung cancer remain resistant (Kort, Paneth, & Vande Woude, 2009).

Despite this progress, the fear of cancer and the limitations of conventional treatment for so much of cancer’s history enabled cancer quackery to flourish. Numerous substances were claimed to control or cure cancer, and looking at a few examples of some of the more contemporary cancer hoaxes is illustrative. In the 1940s, Dr. William F. Koch sold highly distilled water that he claimed held a 1-trillionth part of the chemical glyoxylide. More than 3,000 people paid anywhere from $25 to $300 for this useless drug. Koch was tried twice, but one trial ended in a mistrial and the other resulted in a hung jury. Koch soon retired to Brazil, but the Koch treatment was still offered in Mexico.

Harry Hoxsey soon filled the gap left by Koch. Hoxsey claimed that he had a formula for two medications that his great grandfather found more than 100 years earlier. The two medications consisted of a variety of extracts as well as lactated papsin and potassium iodide, none of which had any proven ability to treat cancer. His Dallas-based clinic offered a lifetime supply of the drug for $400. Hoxsey used his funds, and those of his oil investments, to fight government attempts to shut down his clinic. The Food and Drug Administration finally
succeeded in 1960 after patients had spent in excess of $50 million for this useless treatment. Soon other useless treatments such as Krebiozen and the Rand vaccine were offered, again despite the lack of any medical evidence that such procedures helped. In fact, the Rand vaccine was shown to be not only bacterially contaminated, but possibly carcinogenic (Cassileth, Lusk, Strouse, & Bodenheimer, 1984). Federal laws to regulate drug safety and prevent false claims originally arose from attempts to eliminate these false claims to cure cancer.

Even today there still exists a significant cancer underground. This underground offers alternative and unverified treatments for cancer, such as amygdalin and laetrile, suggesting that the “cancer establishment,” beholden to the pharmaceutical industry, is involved in a conspiracy to withhold inexpensive and unobtrusive treatments from the public. Alternative treatments that are used instead of conventional treatments should be differentiated from complementary therapies such as nutritional regimens or guided imagery that are used along with conventional medical treatment.

**Prevention**

Cancer prevention has, along with treatment, been a major initiative in cancer efforts. Already in the 18th century, observers were noting factors that seemed to be associated with cancer. In 1713, an Italian physician, Bernardino Ramazzini, wondered if the very low rate of cervical cancer in nuns had some relationship to their celibacy. Fewer than 50 years later, in 1761, Dr. John Hill suggested that the new habit of snuffing tobacco might be causing an increase in cancers of the nose. Soon after, Dr. Percival Pott noted the high incidences of scrotum cancer in chimney sweeps. Since that time, the World Health Organization has noted more than 100 chemical, physical, and biological carcinogens, including viruses, that seem to increase risks for certain forms of cancer.

These epidemiological observations and later epidemiological studies have had two implications. First, they have led to considerable efforts to prevent cancer. For example, Pott’s advocacy led to a number of attempts to regulate chimney sweeps, including age and sanitary requirements (e.g., a weekly bath, whether needed or not). In the United States, various attempts at prevention have included controlling exposure to radiation and other carcinogenic substances in air, water, or the environment, as well as numerous attempts to regulate tobacco use. A second implication has been less desirable: the rise of a culture that potentially blames victims for participating in activities, such as smoking, that increase risk.
A BRIEF NOTE ON CANCER AND CULTURE

Since cancer risk is due to the interaction of biological and environmental factors, it is unsurprising that there are significant differences in rates of cancer incidence and mortality among cultures and cultural groups within a country. As stated earlier, cancer itself, while universal and ancient, tends to be more prevalent in developed countries. Differences in incidence and mortality may reflect ethnic differences in exposure to carcinogenic elements, such as the hepatitis C virus, or other risk factors evident in diet or behaviors, such as tobacco usage. However, these differences in cancer incidence and mortality also may reflect differences in awareness of symptoms of certain cancers or differences in access to early screening or appropriate treatment. In other cases, certain cultural groups may delay seeking health care due to the initial use of traditional treatments or perceived stigma associated with cancer diagnosis (Boston, 2007).

Reducing cultural disparities within the United States or other multiethnic nations will likely involve a number of strategies. Research has reaffirmed that reducing inequalities in access and treatment does much to eliminate differences in mortality (Cooper, Smaje, & Arber, 1998). Culturally appropriate education efforts, especially in the language of targeted groups, are also useful. In addition, health professionals should be educated in the meanings that cancer has in the cultures they regularly treat. As Boston (2007) notes, such education can enhance communication and collaborations among health professionals, families, and patients.

CONCLUSION

Throughout the 20th century, there has been considerable, albeit uneven, progress on cancer. In that time, the nature of cancer has been better understood, and there have been significant successes in treatment and prevention. This century promises even more. The human genome project may improve the understanding of cancer. Newer therapeutic approaches—including targeted therapies, adjuvant therapy, and strategies designed to enhance immune systems—offer promise of continued advances in treatment.

While one aspect of the history of cancer has been progress in detecting and treating the disease, another facet of cancer's history has been the great fear that cancer generates. Cancer has been one of a number of diseases that have been dreaded throughout history. Some, such as the horrific Black Plague, have created fear because of their sudden devastation—killing tens of thousands in
a great epidemic. However, there is another type of dreaded disease, feared not for the rapidity by which they devastate communities, but rather for the slow way that victims die. They are disfiguring and dehabilitating, chronic and terminal. These diseases have included tuberculosis, leprosy, syphilis, and cancer (Doka, 1997). The fear of these diseases provoked a search for a reason for disease—and that search often resulted in blaming the victim. The result was that the disease conferred stigma on the victim, adding isolation and shame to the burdens of illness.

To some degree, the stigma of cancer, at least in the United States, has lessened. In some ways this began in the 1940s as a survivor literature began to emerge that recounted the memoirs of persons that had survived cancer. The moral of these books was twofold: to emphasize the importance of early detection and treatment, and to minimize the stigma victims experienced. To some extent it has been successful; cancer is no longer whispered and hidden. Yet some forms of cancer still retain a sense of blame and stigma. While men can be diagnosed with breast cancer, most share the diagnosis with only a few friends. Colon cancer, still a major killer, provokes questions of whether the victim regularly had colonoscopies. If not, the victim may be perceived as self-negligent.

Lung cancer remains highly stigmatizing, often carrying a sense of blame that lifestyle habits such as smoking caused the disease. In fact, recent restrictions on second-hand smoke further confer that sense of blame, affirming that the smoker is not only endangering self but others as well. Patterson (1987) notes that such restrictions gained ground only after the middle class began to cease smoking. In some ways the language associated with lung cancer—especially ads by the antismoking lobby that even if you choose to kill yourself by continuing to smoke, you must be prohibited from killing others by second-hand smoke—mimics the language of AIDS that described pediatric patients as the "innocent" victims of the disease, thereby implying another group is not so innocent.

Perhaps one of the next great advances in the struggle against cancer will be that even as one becomes aware of the complex interplay of biological, environmental, and behavioral factors that influence the incidence, treatment, and mortality rates of cancer, there is an affirmation that the focus of efforts remains to treat cancer patients humanely. Any blame should be on a cellular process gone awry—not the individual with the illness.
Kenneth J. Doka, PhD, is a professor of gerontology at the Graduate School of the College of New Rochelle and senior consultant to the Hospice Foundation of America. A prolific editor and author, Dr. Doka's books include Living with Grief: Diversity and End-of-Life Care; Living with Grief: Children and Adolescents; Living with Grief: Before and After Death; Death, Dying and Bereavement: Major Themes in Health and Social Welfare; Living with Grief: Ethical Dilemmas at the End of Life; Living with Grief: Alzheimer's Disease; Men Don't Cry, Women Do: Transcending Gender Stereotypes of Grief; Living with Grief: Loss in Later Life; Disenfranchised Grief: Recognizing Hidden Sorrow; Children Mourning, Mourning Children; Death and Spirituality; Living with Grief: After Sudden Loss; Living with Grief: When Illness Is Prolonged; Living with Grief: Who We Are, How We Grieve; Living with Grief: At Work, School and Worship; Caregiving and Loss: Family Needs, Professional Responses; AIDS, Fear and Society; Aging and Developmental Disabilities; and Disenfranchised Grief: New Directions, Challenges, and Strategies for Practice. In addition, Dr. Doka has published more than 60 articles and book chapters. Dr. Doka is editor of Omega and Journeys: A Newsletter to Help in Bereavement.

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