

The Emperor of All Maladies: A Biography of Cancer  
by Siddhartha Mukherjee

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Teaching American History  
2011

The obituary in today's *Boston Globe* read, "she died in her home after a courageous battle with cancer."<sup>1</sup> A young, 46 year old mother of three sons died from cancer in 2011. How could this be in the technologically advanced world that we live in? Have we not been aware of -- and looking for a cure for -- cancer longer than we had dreamed of putting a man on the moon? What advances were --and were not--made in the twentieth century? What is the prognosis for a universal cancer cure in the twenty-first century? While Siddhartha Mukherjee, author of his fascinating, *The Emperor of All Maladies: A Biography of Cancer*, most likely did not personally know today's latest cancer victim, he has written a wonderfully thoughtful and compassion-laced history, or biography of cancer, which includes the detection, treatment paths, prognoses, and current cancer-state of many of his patients. These intimate patient stories are threaded throughout his successful attempt to speak in laymen's terms about a disease that has affected every one of us, and yet still mystifies scientists, chemists and all those connected to the medical field.

This book came highly recommended by Mark Lytle who spoke at the Teaching American History Institute this past summer. Without its pictures, acknowledgements, glossary or the interview with the author (all of which I read), the narrative stands at 468 pages. While shorter historically valued books could have been read, I was drawn to this story having lost my father, and three of my four siblings to cancer, all before I turned 50. Although my familial connection to cancer was above average, my understanding of its cause was below average. I became a rigid and adamant cancer preventing patient scheduling all cancer-screening tests as quickly as they were recommended as well as

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<sup>1</sup> The Boston Globe Tuesday, August 23, 2011, page B10.

having thoughtful and reflective conversations with my primary care doctor about warding-off cancer at any possible early-stage.

I just last week had an annual physical with my primary care doctor to whom I brought the book. I took it with me to hoping to strike up a conversation with her and she beat me to it. She said, “I just bought that book.” I was so excited that she would be reading it because the biggest take away from the book is that cancer is not monolithic, it is not heterogeneous, and a one-size-fits-all-cure is simply not happening. The cancer disease cannot be underestimated: it is immortal affecting different parts of the body and different people differently. While breast cancer has seen success in finding combative drugs, these drugs do not cure all the people all of the time. Cancer is huge in its scope and for one to begin to understand it one must first accept that it is still today, in 2011, a mystery.

My kind doctor and I did not discuss particulars about the book as I did not want to give anything away, but my respect for her practice grew as she admitted that recently she had to refer a number of her patients to cancer specialists as her breadth of knowledge on the subject was lacking. When I see her next, we hopefully will discuss that no one’s breadth of knowledge with a one-size-fits-all-understanding of, and cure for, cancer – exists.

Mukherjee’s ultimate aim with his book is to “raise a question beyond biography: Is cancer’s end conceivable in the future? Is it possible to eradicate this disease from our bodies and societies forever (p. xvii)?” From the first pages of the book we are told “cancer is not one disease but many diseases” and that they are all called cancer because “they share a fundamental feature: the abnormal growth of cells (p. xvii).”

In the author's note we learn why Mukherjee's book came to be. After "having completed a residency in medicine and graduate work in cancer immunology, [he] began advanced training in cancer medicine (cancer oncology) at the Dana-Farber Cancer Institute and Massachusetts General Hospital in Boston. [He] initially envisioned writing a journal of that year—a view-from-the-trenches of cancer treatment. But that quest soon grew into a larger exploratory journey that carried [him] into the depths not only of science and medicine, but of culture, history, literature, and politics, into cancer's past and into its future (p. xivv)."

The history of cancer we are told begins over four thousand years ago with its first documentation by Imhotep, "a great Egyptian physician who lived around 2625 BC" (p. 40). This great physician recorded "broken bones and dislocated vertebrae with a detached, sterile scientific vocabulary, as if he were writing a modern surgical textbook" (p. 40). One case that Imhotep describes is a patient "having bulging masses on breast...bulging tumors of the breast mean the existence of swellings on the breast, large, spreading, and hard; touching them is like touching a ball of wrappings, or they may be compared to the unripe hemat fruit which is hard and cool to the touch" (p. 40). Under Imhotep's writings on "therapy" were the words "there is none."

Chronologically, the second recording of early cancers takes place two thousand years later, approximately 440 BC, when the Greek historian Herodotus, told the story of Atossa, "the queen of Persia, who was suddenly struck from an unusual illness" (p. 41). She was the daughter of Cyrus, and the wife of Darius. In the middle of her reign she "noticed a bleeding lump in her breast" (p. 41). While doctors were available for her every pain, she chose to isolate herself and allowed her Greek slave, Democedes, to

remove the tumor (p. 41). Because of the success of the tumor, Atossa persuaded her husband, at Democedes' nudging, to go west to Greece for further conquest. It is presumed that "cancer, even as a clandestine illness, left its fingerprints on the ancient world" (p. 42).

Mukherjee reminds us that both Imhotep and Herodotus are storytellers and to be sure of their tales, one would need actual tissue. Tissue confirming the earliest of cancers comes from "a thousand-year-old gravesite in a remote, sand-swept plain in the southern tip of Peru" (p. 42). While the Chiribaya tribe made no effort to preserve their dead, "the climate is almost providentially perfect for mummification" (p. 42). This body, revealed by a paleopathologist, had "a malignant bone tumor" (p. 42).

Mukherjee questions why cancer findings in much earlier history are so rare and then he offers his answer: "Cancer is an age-related disease...the risk of breast cancer, for instance, is about 1 in 400 for a thirty-year old woman and increases to 1 in 9 for a seventy year old" (p. 44). Earlier people were consumed with "tuberculosis, dropsy, cholera, smallpox, leprosy, plague, or pneumonia. If cancer existed it remained submerged under the sea of other illnesses" (p. 44). The author summarizes it nicely: "civilization did not cause cancer, but by extending human life spans, civilization *unveiled* it" (p. 44).

Not only is it that we as a society have found a cure for the more topical illnesses described above which has simultaneously increased longevity, but we have been able to "detect cancer earlier and earlier, and to attribute deaths accurately to it" (p. 44). The recognition of carcinogens in our diets (pickling reagents and preservatives causing

stomach cancer) and our lungs (smoking) has brought the needed attention to the public to bring these cancers under control (p. 45).

Cancer, the word, comes from the Greek word for crab: *karkinos*. Hippocrates, in approximately 400 BC, coined this phrase because the crab, which dug in the sand with its legs spread in a circle, reminded him of the “tumor, with its clutch of swollen blood vessels around it” (p.47). Oncology would take its name from *onkos* that was “the Greek term for a mass or a load, or more commonly a burden; cancer was imagined as a burden carried by the body” (p. 47).

The author does a great job of recounting the discoveries of the nineteenth century that made surgery more effective: sterilization procedures, and the first publically demonstrated use of anesthesia in 1846 at Massachusetts General Hospital (p. 56). Localized tumors could now be removed. With that success, next was the movement of radical surgery to remove cancer. (The word “radical” means “root” in Latin and it is just that which surgeons subscribing to this cure for cancer aimed to get at.) For breast cancer, this radical surgery would not only remove the tumor, but also “dig even deeper into the breast cavity, cutting through the *pectoralis major*, the large prominent muscle responsible for moving the shoulder and the hand” (p. 65). This radical approach came with a “physical penalty” because these “mammoth mastectomies would permanently disfigure[] the bodies of patients” (p. 65).

“The radical mastectomy had thus edged into the ‘superradical’ and then into the ‘ultraradical,’ an extraordinarily morbid, disfiguring procedure in which surgeons removed the breast, the pectoral muscles, the axillary nodes, the chest wall, and occasionally the ribs, parts of the sternum, the clavicle, and the lymph nodes inside the

chest” (p. 194). It was believed that “the more a surgeon cut, the more he cured” (p. 194). Political feminism of the 1960s led to the birth of medical feminism. Women were refusing to submit to these radically painful answers to breast cancer. Rachel Carson refused a radical mastectomy and in hindsight it was the right choice because her cancer had already spread beyond the breasts (p. 200).

Radiation therapy followed radical surgery and its radical usage would also be tested. The discovery of the new element radium from the Curies at the end of the nineteenth century would lead to radiation not only on tumors, but on metastasized cancers as well (the usage of radiation to treat progressively moving cancers would be found to be ineffective). Radiation would be found to come at a cost as well: not only did Marie Curie die from leukemia, but also it would be confirmed that radiation was “cancer-curing at times, cancer-causing at others” (p. 78).

Chemotherapy and its many varied forms of cocktails would meet cancer patients in the 1950s. These drugs got their origins from the colonization of cotton and the chemical dyes which were synthesized in the 1850s. The Germans would excel at the chemical dyes and as history has shown, it was the Germans who would connect the step from cloth dyes to mustard gas which they unleashed in Europe in July of 1917. This mustard gas would deplete victims of their white cells that proved chemicals had a specific affinity with cancerous cells (p. 88).

Today it seems that every major disease has mastered the art of publically raising awareness and funds – requests for donations for various medical walks, runs or rides are everywhere, and everyone, regardless of economic status has been asked to contribute. This type of public involvement began in 1937 when Franklin Delano Roosevelt

“launched a polio hospital and research center, called the Warm Spring Foundation, in Georgia in 1927” (p. 94). At the beginning of his presidency a paralyzed president was not a good image considering the paralyzed economy. However, with the big win of his second election he “launched the National Foundation for Infantile Paralysis, an advocacy group to advance research on and publicize polio” (p. 94).

With the help of Hollywood, “the actor Eddie Cantor created the March of Dimes campaign for the foundation—a massive and highly coordinated national fund-raising effort that asked every citizen to send Roosevelt a dime to support polio education and research” (p. 94). By the late 1940s with the help of these funds scientists were close to finding a vaccine to cure polio.

As with the polio fundraising campaign, Sidney Farber would launch a successful fundraising and awareness campaign to beat childhood cancer: the Jimmy Fund, which is today synonymous with the Boston Red Sox. In his book, Mukherjee spends a great deal of time on Sidney Farber and his work with New York wealthy socialite, Mary Lasker. They combined efforts to find a universal cure for cancer, but were ultimately disappointed with the National Cancer Act of 1971 which was designed to please all of the interests (National Institutes of Health, Laskerites, scientists, lobbyists, administrators and politicians), but it pleased none of them (p. 189).

Without a universal cure, the cure for cancer turned to the prevention of cancer. Clinical trials had originally been offered to those with later stages of cancer, but with identifiable carcinogens now known to cause particular cancers, the fight to control cancer steered down a different highway.



Cigarette consumption in the late nineteenth century and the first half of the twentieth century had become the national addiction. The medical hazards of tobacco, however, went hidden because doctors themselves were smoking and the smoking industry did all it could do to hide its death effects. Conducting trials to prove the effects of cigarette smoking were not possible as the public wasn't interested in tobacco causing cancer. But, with Britain's success of nationalizing its health care, all doctors--more than 60,000- had to be nationally registered and upon these doctors' deaths, their cause of death had to be noted. Two bright scientists had earlier written to all of these doctors asking if they had smoked or not, and surprisingly, two-thirds of the doctors answered the survey. During the "twenty-nine months between October 1951 and March 1954, 789 deaths were reported...thirty-six of these were attributed to lung cancer. When these lung cancer deaths were counted in smokers versus nonsmokers [from the initial survey]...all thirty-six of the deaths had occurred in smokers" (p. 249). Sadly, even with these proven figures, the cigarette-addicted public and the wealthy tobacco industry managed to hide the true effects from the public. Finally, it was January 1 of 1971 "at 11:59 p.m., on the first night of the New Year, the Virginia Slims slogan *You've come a long way, baby* flashed momentarily on TV screens, then vanished forever (p. 267).

Cancer research's shift from a universal cure to prevention has been successful, although not with all cancers. While progress has clearly been made in some cancers such as breast (although never is it a 100% cure), pancreatic and gall-bladder cancers' prognoses offer only a few months' extension on life. Mukherjee's final prediction is honest: "with cancer...no simple, universal, or definitive cure is in sight --and is never likely to be" (p. 466). His respect for the disease could not be clearer and was quite

visible during the birth of his first daughter. He tells us that that he missed some of the happenings of the birth of his first born because just as he cut the umbilical cord he whisked it away to save the life-saving blood-forming stem cells which can be frozen and stored and used to treat leukemia in the future (p. 399).

Mukherjee eloquently, passionately and personally educates his readers about cancer. We learn that many cancers are hereditary, environmental, or virally connected. Yet, the origins of many cancers are simply unknown. While the studies on the unending list of possible carcinogens are not complete, the best plan of action is prevention. When you know cigarette smoking causes cancer you must stop. And, the earlier the detections—equated with the earlier stages—offer the best survival rates. Today’s cures include a combination of the earlier options of surgery, radiation and chemotherapy.

Cancer is immortal and for some it has become their new normal (p. 459). Mukherjee, on a single page before his author’s notes at the very beginning of his book, tells us that “[a] quarter of all American deaths, and about 15 percent of all deaths worldwide, will be attributed to cancer. In some nations, cancer will surpass heart disease to become the most common cause of death”.<sup>2</sup> Mukherjee tells us: The question then will not be *if* we will encounter this immortal illness, but *when* (p. 459).

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<sup>2</sup> There is no page for this quote nor is the information’s source noted in his notes.

### How will I use this in my classes?

This book has been an eye-opener for me not only personally, but also as a teacher. Because of cancer, so many students have lost family members, and to be able to understand the various causes, stages, treatments, as well as its historical, social and political angles, makes me a more educated and compassionate teacher. Having a bully pit, the knowledge of prevention will be shared together with a lesson on cigarette smoking: its rise to American addiction; the proof that it causes cancer; the power of wealthy industries to persuade Congress and to block the public from knowing the truth; and the power of the press and the American people to raise awareness and funds to combat cancer.