The Unsung Warriors in the War Against Cancer

Cancer kills an estimated 20,000 people a day, who are parents, siblings, relatives, and friends. It kills families. Everyday my family is thankful that my mom, diagnosed with terminal stage IV cancer 5 years ago, isn't taken by this beast we call cancer. My mom, who calls her cancer "everywhere cancer," takes an assortment of drugs to aid her in her fight. Without these drugs, she would not be here today having the hope of seeing my siblings and me graduate or get married. Everyday my mom fights to be in our future and because of the treatments she has received, she can. My mom is the strongest person I know, but cancer still knocked her down. This terrible beast can knock anyone down. The only way for us to fight this savage animal is to use the animals that we can control. Animals are the unsung heroes of this race against cancer and because of them, we have been able to accomplish more than we thought possible.

Cancer is a disease caused by an uncontrolled division of abnormal cells. Cancer cells have incomplete genomes with mutations due to the cells' lack of patience for their genomes to be completely copied. It is usually combated with chemotherapy, a treatment that originated during World War I. The researchers, Adair and Begg, applied mustard gas to the skin of mice with chemically-induced tumors. This resulted in (a) regression of the tumors. They furthered their experiments by testing the mustard gas on rabbits to find the correct dosage. Human clinical trials of this treatment began in 1931. Since then, researchers have developed new, more successful, and less harmful chemical drugs through animal testing.

My mom has esophageal cancer that has spread to her brain, lungs, colon, ovaries, liver and lymph nodes. Her doctors have her on an assortment of chemotherapy treatments to fight it. Right now, her chemo cocktail consists of Docetaxel (Taxotere), Folinic acid (Leucovorin), and Fluorouracil (5-FU). Taxotere was developed through its testing on mice. It was discovered that too high of a dosage could cause death from toxicity. Also, because it is composed partly of alcohol, it caused symptoms such as confusion and stumbling. Due to the toxicity of many drugs, Leucovorin was developed to counter death by toxicity while enhancing the effectiveness of

other drugs. Leucovorin was tested in rats to fight high-dose methotrexate, which could cause death within hours to these animals. The deaths were reduced when rats were given high-dose methotrexate with Leucovorin. Finally, the drug 5-FU is frequently used to combat cancers by impeding DNA and protein synthesis. While being tested on mice, researchers learned that it caused both acute central nervous system (CNS) damage and progressively worsened degeneration of the CNS. The scientists also saw that the results of 5-FU was minimally affected by the dosage, meaning that they could give low doses to avoid toxic levels without decreasing its effectiveness. Researchers dedicate their lives to testing specific drugs such as these, utilizing animals to benefit their fellow humans.

Another battle, likely caused by chemotherapy, is her Parkinson's disease. The study of Parkinson's received nobel prizes for discovering the effect of dopamine in the brain’s control of motion and its link to Parkinson’s disease. When Arvid Carlsson gave rabbits a drug to remove dopamine from their brains, they went nearly unconscious. He then revived them with levodopa which the brain converts to dopamine. Through continued research Carlsson saw that Parkinson's was due to the loss of dopamine. He reasoned that, just as levodopa was converted into dopamine in the rabbits, it would be converted into dopamine in humans and possibly cure Parkinson's disease. Unfortunately, the effects of levodopa subsides. As researchers uncovered the reasons as to why it wears off, they realized that dopamine deficiency causes areas of the brain to become less susceptible to neurological signals. Since these are permanent changes, they realized they should focus on Parkinson's prevention and increased longevity of life after diagnosis, via animal testing.

The animals in these trials have helped save many lives, including my mom's, and other people's moms, dads, siblings, relatives, and friends. They have aided in the fight against the many fronted war that is cancer and all the symptoms and diseases that sprout from cancer. People may try to fight animal testing but in reality it has saved many people and this is the positive side of our means to an end. Many people owe these unsung warriors their lives.

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