

Treatment of Cancer by Surgical and Radiation Procedures

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Commentary

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DESCRIPTION

Surgery, chemotherapy, radiation therapy, hormone therapy, targeted therapy including immunotherapy such as monoclonal antibody therapy and synthetic lethality are all options for treating cancer, these treatments are often administered separately (e.g. chemotherapy before surgery). The location, severity, and stage of the disease as well as the patients general health all influence the therapy option. The most effective treatment for a patients specific cancer can be determined with the use of cancer genome sequencing. There are also numerous cancer treatments under development. According to recent predictions, two out of every five people will develop cancer at some point in their lives. The ideal if frequently attained goal of treatment is to completely eradicate the cancer without causing harm to the rest of the body, and this is frequently the case in practical terms.

Surgery can occasionally be employed to do this, although its effectiveness is sometimes constrained by the propensity of cancers to penetrate surrounded tissue or spread to distant locations by microscopic metastasis. Additionally damaging to healthy cells are chemotherapy and radiotherapy. Therefore, in some circumstances a cure with minimal side effects may be considered a practical goal. In addition to treating cancer as a chronic disease practical goals of therapy may also include palliative care without a curative intent and suppressing the disease to a subclinical stage and maintaining that state for years of good quality of life for advanced-stage metastatic cancers. It is improbable that there will ever be a single "cure for cancer" just as there is likely to be a single therapy for all infectious diseases because "cancer" refers to a class of diseases.

Surgery

The total surgical removal of non-hematological tumors is technically conceivable, although it is not always feasible. Prior to surgery, when the cancer has spread to other parts of the body, total complete removal is typically not possible. According to the Halstedian model of cancer development, tumors first develop locally before migrating to the lymph nodes and eventually the rest of the body. The demand for regionally targeted treatments, such as surgery for small cancers, has increased as a result. It is now known that even smaller surface cancers have the capacity to spread. A few examples of surgical cancer therapies include mastectomy for breast cancer, prostatectomy for prostate cancer, and lung cancer surgery for semi cancers of the lungs. The goal of the procedure could be the removal of the entire organ or simply the tumor. Recurrence is the process through which a single, visually invisible cancer cell returns and develops a new tumor. To reduce the possibility that tiny cancer cells are still present in the patient, the pathologist will analyse the surgical specimen to see if a margin of healthy tissue is there.

Radiation therapy

Radiation treatment commonly referred to as radiotherapy, X-ray therapy, or irradiation, involves ionizing radiation to reduce tumors and kill cancer cells by destroying their DNA. This prevents the cancer cells from proliferating and dividing further. Radiation therapy has the potential to harm DNA both directly and indirectly by generating charged particles free radicals within the cells. External Beam Radiotherapy (EBRT) and brachytherapy are two different ways to deliver radiation therapy. Radiation therapy has specific, regional effects that are limited to the area being treated. Despite the fact that radiation can harm both healthy cells and malignant cells, most normal cells can bounce back and resume their usual functions. Radiation therapy aims to kill as many cancer cells as possible while causing the least amount of damage to surrounding healthy tissue. As a result, it is administered in a number of fractions, allowing time for healthy tissue to recover in between. Radiation therapy has specific, regional effects that are limited to the area being treated. Despite the fact that radiation can harm both healthy cells and malignant cells, most normal cells can bounce back and resume their usual functions. Almost every type of solid tumors can be treated with radiation therapy, including sarcomas of the soft tissues and malignancies of the brain, breast, cervix, larynx, liver, lung, pancreas, prostate, skin, stomach, and uterine. Leukemia and lymphoma are other cancers that are treated with radiation. The radio sensitivity of each form of cancer and the presence of surrounding tissues and organs that could be harmed by radiation are two factors that affect the radiation dose delivered to each spot. So radiation therapy has adverse effects, just like every other type of treatment.