

Response of Immune System in Cancer Treatments

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DESCRIPTION

We all naturally have an immune system in our bodies. Its function is to eliminate cells and foreign or damaged material before they cause problems. Our immune system can typically detect and eliminate external invaders like germs and viruses. Signals are used by the immune system to attack these cells while sparing healthy cells. A virus or bacteria-based sickness is not the same as cancer. It entails the unchecked development of healthy bodily cells. In other words, the immune system might miss cancer cells. Cancer cells can conceal and proliferate, despite the fact that they appear different under a microscope. Cancer cells can conceal themselves by expressing proteins that activate a "checkpoint" to thwart immune system attacks.

In its Cancer Genome Atlas project, the National Cancer Institute (NCI) looked into prevalent tumor types. According to the study, lung cancer, skin cancer, and bladder cancer had the most cellular alterations [1]. These cancers may respond better to "immunotherapies" or medications that encourage the immune system to seek out cancer cells [2]. Any medical procedure that strengthens the immune system is known as immunotherapy. It supports the body's search for and elimination of cancer cells. The field of immuno-oncology investigates the relationship between the immune system and cancer. It makes new remedies using such information. Radiation and chemotherapy treatments operate differently [3]. Directly attacking cancer cells in growth is their goal. On the other side, immunotherapies disable the signals or checkpoints and stimulate the immune system to fight or restrain cancer [4]. Our immune system is altered by these treatments in order to combat cancer. A network of cells, tissues, and organs make up your immune system [5]. They cooperate to identify and eliminate invaders in your body. Because it can distinguish between self and non-self, the immune system keeps us safe. "Self" refers to our own physical parts. Any strange cell or invader, such as bacteria, viruses, parasites, and fungi, is referred to as "non-self." Normally, a cell that is recognized as "self" by our immune system will not be attacked. The immune system has difficulty recognizing cancer cells [6]. They originated in our own cells. Cancer cells mutate or alter as they multiply and spread, seeming less and less like healthy cells. Our immune system can occasionally detect these alterations and respond. Sometimes the

cancer cells can conceal themselves so they can spread. Three factors assist tumors in evading the immune system.

- Antigenicity- An antigen is a particular kind of protein that the immune system recognizes. It's possible that cancer cells lack the necessary antigens to be detected.
- Immunogenicity- Some cancer cells send out signals to prevent an immune onslaught.
- The individual patient- Different patients' immune systems respond to cancer control differently.

Chemotherapy fights cancer by using chemicals. In radiology, radiation is used to destroy cancer cells. On the other side, immunotherapy aims to combat cancer by using your own immune system. There are numerous reported mutations or known types of mutations in bladder cancer [7]. These modifications enable immunotherapy medications to effectively treat cancer. Immunotherapy may therefore benefit those with bladder cancer. It is most frequently applied to malignancies in their late stages. More research will lead to the development of better treatments [8]. For the treatment of advanced cancer, the FDA has approved a number of active immunotherapies (including skin cancer and cancers of the lung, bladder, kidney, prostate and blood). In clinical studies, a wide variety of immunotherapies and combinations are being investigated. Clinical trials are research projects that examine a novel medication or therapy. They aid clinicians in learning the most effective patient care techniques. They are carried out in stages to determine the safety and efficacy of a novel strategy. Clinical trials are required before the US Food and Medicine Administration (FDA) may approve a drug or treatment.

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