Troy and Cancer Treatment

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Introduction:

In many organs and tissues of adult animals, the balance between cell renewal and cell death is maintained. In the body, different types of mature cells have a specific lifespan, and with their death, new cells are formed by the proliferation and differentiation of stem cells. Under normal conditions, the production of new cells is regulated in such a way that it remains constant among a variety of cells. Sometimes it is thought that the cells created respond to natural growth control mechanisms only for a short time. These cells produce clones. They create a significant increase in the number and size of a tumor or neoplasm. The term cancer refers to a malignant tumor. In addition to uncontrolled growth, malignant tumors also show metastases. In this case, small groups of cancer cells are isolated from the tumor and transported by lymphatic or blood vessels to other tissues, where they continue to multiply. In this case, a primary tumor in one location can cause a secondary tumor in another location. Today, in general, conventional treatments have been used to control and solve the problem of cancer, among which we can mention chemotherapy, immunotherapy, targeted therapy, and so on. Traditional cancer treatments usually have a low survival rate due to tumor progression, resistance to treatment, and inability to treat the tumor. Bacterial therapies have unique mechanisms for treating cancer that are not available by standard methods. Bacteria can specifically target tumors, actively invade and search for tissue, and cause toxicity in a controlled manner. Over the past decade, Salmonella Clostridium and other genera have controlled tumor growth and survival in animal models.

Results:

The use of the immune system in the treatment of cancer is one of the most effective and lasting methods. In this treatment, encouraging the immune system to destroy cancer cells is one of the key points. The most important problem with this method is the ability of the tumor to escape from the immune system and cause poor tolerance and immunogenicity. We get cancer cells through them so that the immune system can detect them and try to fight and kill the cancer cells.

Compared to cancer target therapy, bacteria have a special place, which is related to their three exclusive characteristics. Almost all tumors are low in oxygen pressure (hypoxia) and anaerobic bacteria are preferably preferred. They live in this environment. In addition, bacteria can be easily engineered and changeable, and with proper planning within the genome of bacteria, the desired changes can be applied.

As mentioned earlier, cancer can be treated by bacteria in a variety of ways, including 1- vector gene therapy 2- intracellular plasmid transmission 3- bacterial spores 4- bacterial toxins with ligand 5- bacterial toxins

1. Gene therapy vectors: The gene transfer system is divided into two groups: non-biological (chemicals and physical methods of plasmid DNA transfer to mammalian cells) and biological (viruses and bacteria). Like viruses, the inherent-biological properties of bacteria allow DNA to be delivered efficiently to cells or tissues. But in terms of safety, it is preferable to viruses. One of the specific bacterial replication methods in tumors, which are also anti-tumor ideal treatments, is the selective targeting of the tumor with minimal effect on normal cells. To achieve this, it is necessary to characterize tumor cells relative to the cell Determine the normal utilities.

2. Intracellular plasmid transmission: Bacterial plasmid DNA transfer by bacteria is a powerful tool for expressing protein in the cells in general. It is necessary for the transfer of genetic material. The bacterium enters the cell completely. The bacterial species studied are examined and classified based on their location. They are located in the extracellular space (agrobacterium) and are active. On the other hand, one of the common methods of using bacteria as a vector of targeted expression of genes in cancer cells is through targeted regulation of gene expression. A good candidate for targeting gene expression in lung cancer is through the use of bacterial plasmid. Salmonella is generally known to cause food poisoning. This bacterium uses various methods to deal with the immune system when it is inside the body. This bacterium is able to excrete a protein that inhibits the body's ability to produce inflammatory factors. This helps the bacterium to be detected later by the immune system, thus providing sufficient time for production throughout the body. This protein affects the epithelial cells of the intestines and stomach. It can also produce proteins on it and absorb the metal ions needed to keep the bacteria alive. In this way, the efforts of the body system were reduced. Under optimal conditions, the bacterium can multiply rapidly and double in population within minutes. Recent research has altered the wild type of the bacterium and created a genetically modified form that makes it impossible for the disease to shrink solid tumors and prevent them from growing again.

Conclusion:

Cancer has increased dramatically in the world, with the International Agency for Research on Cancer reporting the death toll from the disease as 13 million a year as the world's population grows. The high prevalence of cancer has led to an increase in the use of chemotherapy and radiation therapy techniques. These techniques will also cause damage to healthy tissues. For this purpose, researchers have talked a lot about immunotherapy for cancer treatment. As mentioned, the immune system does not recognize the cells that are going to become tumors as a foreign factor and does not attack it and there is enough time to cells give rise to peptic ulcers, so studies have shown that tumoral cells can be detected by bacteria so that the immune system can detect them before the tumors progress and enter the stage of vascular metastasis. And deal with and eliminate them.

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