

The Role of Cell Therapy in Treating Cancer

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Abstract: With the continuous development and advancement in the field of medical technology, cell therapy for treating cancer has received extensive attention. Compared with conventional therapy, cell therapy provides a new direction of scientific research, which is worthy for clinical application and promotion. This article focuses on the role of cell therapy in cancer treatment and possibly a good reference for the future.

Keywords: *cell therapy; cancer; therapeutic mechanism*

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0 Introduction

Under the background of continuous development and progress in modern biology, cell therapy has become one of the most effective and cutting-edge technologies in cancer treatment, which provides a clear direction for scientific research based on improving medical timeliness.

1 First, the role of cell therapy in cancer treatment

In traditional cancer treatment mechanism, chemotherapy, radiotherapy, and surgical treatments are prevalent. In general, conventional chemotherapy is a choice during early cancer, which can be treated effectively, accurately, and quickly. However, there is certain risk and has many corresponding complications. Significantly, traditional therapy is less targeted, and it affects both normal and healthy cells in the human body during the process of inhibiting tumor cells, causing great damage to the human body. This paved

a way of finding a less harmful therapy for cancer treatment. Based on this, new cell therapy has become the focus of research in the medical field. Among them, DC therapy, cytokine-induced killer (CIK) therapy, and DC-CIK combination therapy have been gradually promoted, which has important clinical research significance^[1].

2 Killer cell therapy

This was proposed in the 1980s, mainly due to disadvantage in cell therapy mechanism of cytokine decoy. At present, the mechanism of CIK cell therapy is applied usually for the treatment of individualized tumor cells at local and abroad, which can effectively treat human peripheral blood cells. Individual cells are coinduced to rationally acquire the corresponding heterogeneous cells.

At the same time, it can express CD3 and CD56 membrane protein molecules, and it possesses antitumor activity of T-lymphocytes and has certain value of application.

First, the use of CIK cells can effectively kill tumor cells in the patient's body. The morphological observation of CIK cells is similar to that of large granular lymphocytes, which can focus on target cells and be in non-MHC-restricted cells. Importantly, CIK cells directly release cytoplasmic cytotoxic granule contents that can effectively enter the outer compartmental structure of the cell and kill tumor cells. Second, CIK cells can regulate the immune system of patients to a certain extent, thereby indirectly killing tumor cells. According to experiments and relevant researches, it is observed that CIK cells can readily secrete cytokines and rationalize cytotoxicity. This is not only proficient in inhibiting tumor cells but also rationalize the regulation mechanism to ensure that the immune system is induced to kill tumor cells.

Third, CIK cells are competent in inducing apoptosis and even necrosis of tumor cells. The corresponding experiments have shown that CIK cells secrete FLIP, Bcl-2, and other genes, which induce tumor cell apoptosis.

In addition, CIK cells can successfully promote the proliferation and activation of T-lymphocytes and readily employ their antitumor effects. At present, the application of CIK cell therapy in cancer treatment can ensure that the patient's quality of life score has improved significantly by improving the effect after treatment.

3 DC therapy

DC therapy is one of the professional treatments which are made of antigen-possessing cells with better antigenic effects in patients, mainly dendritic cells. It not only captures bacteria in patients but also effectively delivers them to secondary lymphocytes, which plays an important role in connecting natural immunity and specific immunity. DC therapy can effectively mobilize immune cells in patients. At present, in the process of antitumor immune process and basic analysis, low expression of tumor cells or non-expression of MHC molecules is very critical, and some tumor cells will synthesize and secrete cytokines, and these cytokines may even inhibit tumor cells in tumor patients. The maturation of the dendritic cells requires the use of cellular action to effectively avoid the attach of tumor cells^[2].

First, DC itself can effectively express MHC-I, MHC-II, etc., and can form a richer presentation relationship, effectively transport tumor antigen peptides, activate cells to some extent, and enhance the body's ability to resist tumor cells.

Second, DC has certain ability of directional migration. In the process of practical application and action, it directly secretes chemotactic molecules which can specifically attract T lymphocytes. It promotes the T cells to accumulate at tumor sites, thereby enhancing the ability of anti-tumor cells and effectively completing anti-tumor operations.

Third, after T-lymphocytes are activated in the human body, DCs will bind to T-cells. At the same time of interaction, they can effectively secrete promoting factors, which promote the activation and growth of T-cells and effectively maintain T-lymphocyte immunity. Their role to a certain extent ensures that T-cells can grow and function in the tumor site for a long time and fundamentally improve the body's antitumor ability.

At present, DC-CIK combination of drugs has become the major focus of research in the field of medicine.

Such combined drugs can effectively improve the level of action of ligands, enhance the killing ability of cells, and promote the expression of CIK cells to a certain extent. Antitumor cells have laid a solid foundation and show promising treatment capabilities.

4 Cancer stem cell therapy

After analyzing the tumor cells in the human body, it was found that the traditional concept of the patient's tumor cells is an abrupt change in cells, and there will be infinite growth. However, as the medical level continues to develop, people have realized that tumors originate from the stem cells of patients. The growth, metastasis, and recurrence of tumor cells are similar to the growth mechanism and development process of stem cells *in vivo*. Therefore, the characteristics of stem cells are used to establish corresponding tumor treatment. Treatment mechanism has major significance for the human fighting against tumor^[3].

At present, most of the treatment methods rely on killing tumor cells, thereby reducing their volume or quantity. However, this method "treats the symptoms and does not cure the problem." It is mainly due to the lack of knowledge about tumor cells, their formation, and origin. Whether it is the growth process, the metastasis process, or the recurrence process, it depends on the cancer stem cells. Most of the treatment methods are not satisfactory in eliminating tumor cells and eradicating it completely. In addition, most of the targeted cells of the drug are already dividing cells, while the cancer stem cells are still dormant.

Tumor cells when treated began to exhibit drug resistance and transform simultaneously into a stem cell. From the perspective of cancer stem cells, based on the comprehensive analysis, it is necessary to use the cancer stem cells as therapeutic target cells and use the corresponding treatment to improve the scientific level of targeting. Centralized elimination of targeted cancer stem cells. In addition, it is necessary to induce differentiation of cancer stem cells, thereby reducing tumor origin, and using other therapies to remove the tumor cells after division, tumors can be completely reduced and can have improved therapeutic effects

5 Second, the application of cell therapy in cancer treatment

In traditional cancer treatment, mechanisms such as surgical therapy and chemotherapy affect the quality of

patients and not an effective treatment method. Based on this, it is proposed that cell therapy has become an inevitable trend in the development of medical care. However, the corresponding cell therapy also has its own limitations that have to be addressed. Among them, CIK cells are effective in cancer treatment, but they have low specificity and low targeting, during the treatment process. Immune responsive cells cannot be determined accurately. Based on this, the complementary function of DC therapy and CIK cell therapy can effectively improve the rationality of tumor treatment and research procedures, and ensure the comprehensive optimization and upgradation of cancer treatment^[4].

In addition, people's research on cancer treatment is deepening; the concept of cancer stem cells has become the key and pave direction, leading to the researchers. The concept of cancer stem cells has also confirmed the characteristics of tumor cells, which is adopted as the research mechanism. One step of upgrading and optimization provides a path to treat tumors in human and cure the corresponding problems. Most studies show that the process of tumor cell metastasis and regeneration is caused by the characteristics of cancer stem cells. To improve the killing effect of tumor cells, it is necessary to establish a complete mechanism for treating cancer stem cells, thereby reducing the impact of related problems. In

the process of related work on tumor metastasis and recurrence, it is necessary to focus on eliminating tumor stem cells *in vivo* and further promote the combined treatment mechanism of DC-CIK.

6 Conclusion

To emphasize the need of cell therapy in treating cancer is to overcome the drawback of the traditional conventional treatment mechanism that lags in terms of targeting the tumor cells selectively without affecting the healthy cells. Treating using compound therapy can improve therapeutic effect and lessen the suffering of patients. Make sure the treatment level is an eminent one.

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