



Intersection of Cancer Immunology and Cancer Stem Cells in Epithelial Ovarian Cancer

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DESCRIPTION

A group of diseases collectively known as cancer, it is defined by the body's abnormal cells growing and spreading from out control. Cells can form tumours or invade other tissues and organs, interfering with their normal functions. There are many different types of cancer, each with its own specific characteristics and treatment options. Some common types of cancer include breast cancer, lung cancer, prostate cancer, and colon cancer. The causes of cancer are complex and often involve a combination of genetic, environmental, and lifestyle factors. Some known risk factors for cancer include tobacco use, alcohol consumption, unhealthy diets, exposure to certain chemicals and radiation, and a family history of the disease. Early detection and treatment are important for improving the chances of survival and quality of life for people with cancer. Treatment options may include surgery, radiation therapy, chemotherapy, immunotherapy, and targeted therapy, depending on the type and stage of the cancer.

Cancer Stem Cells (CSCs) are a subset of cells within a tumor that have the ability to self-renew and differentiate into various cell types within the tumor. They are thought to play a crucial role in tumor initiation, progression, and resistance to therapy. Epithelial Ovarian Cancer (EOC) is one of these deadliest gynecological malignancies and is often diagnosed at an advanced stage. Studies have shown that CSCs are present in EOC and are responsible for the initiation and progression of the disease. CSCs in EOC are believed to arise from the transformation of normal ovarian stem cells or from the dedifferentiation of mature cells within the ovary. They are characterized by the expression of certain markers, such as CD44, CD117, and CD133, which are used to isolate and study these cells.

CSCs in EOC have been shown to contribute to the formation of tumors, metastasis, and recurrence. They are also thought to be responsible for the resistance of EOC to chemotherapy and

radiation therapy. Therefore, targeting CSCs in EOC is a promising strategy for the development of novel therapies for the disease. Several approaches have been proposed for targeting CSCs in EOC, including the use of small molecule inhibitors, antibodies, and gene therapy. These approaches aim to selectively kill CSCs while sparing normal cells, thereby reducing the toxicity of therapy. However, further research is needed to identify effective targets for CSC-specific therapy and to develop effective drugs with minimal side effects. In conclusion, CSCs play a significant role in the initiation, progression, and resistance of EOC. Targeting CSCs represents a promising strategy for the development of novel therapies for this deadly disease.

Cancer immunology is a branch of immunology that studies the interaction between the immune system and cancer cells. The immune system is designed to recognize and eliminate foreign invaders, including cancer cells. However, cancer cells have developed strategies to evade the immune system, leading to tumor growth and progression. Immunotherapy is an approach to cancer treatment that harnesses the power of the immune system to target and kill cancer cells. This can be done through various methods, such as stimulating the immune system to attack cancer cells or using engineered immune cells to specifically target cancer cells.

Cancer immunodiagnosis, on the other hand, refers to the use of immunological methods for cancer diagnosis. This includes the detection of tumor-specific antigens, such as Prostate-Specific Antigen (PSA) for prostate cancer, as well as the use of immunohistochemistry and flow cytometry to identify cancer cells in biopsy samples. Immunodiagnosis can also be used for cancer staging, which involves determining the extent of cancer spread. For example, measuring the levels of certain biomarkers in the blood or using imaging techniques that target specific immune cells can provide information about the progression of the disease.

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