Analysis of Immunotherapy in lung cancer

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Introduction

Lung cancer is the number one cause of cancer related mortality. There has been advances at molecular level in treatment of non-small cell lung cancer (NSCLC). The discovery of immune checkpoints has brought in a radical revolution in the therapeutics landscape of lung cancer, specifically NSCLC. Nevertheless, there are many treatments based in immunology for lung cancer.

Objectives

The purpose of this work is to review immunotherapy methods in lung cancer.

Material and Methods

A wide PubMed search was performed using the keywords: Immunotherapy and Lung Cancer. 2939 articles were found. A systematic review during the last year was made.

Results

Small cells lung cancer (SCLC) is an aggressive disease. Nevertheless, there has been clinical studies of immunotherapy in extensive-stage SCLC. The Impower133 study involves the drug atezolizumab, and inhibitor of PD-L1. The Caspian Trial involves durvalumab and an anti-PD-L1 inhibitor. The KEYNOTE-604 study, the pembrolizumab and PD-1 inhibitor are involved. Therapies can be combined, and radiation and immunotherapy are an option. RT may be important in the treatment of NSCLC, because it can increase the release and presentation of antigens, augmenting T cell sensitization, and promoting antitumor immune responses. A good way is that the tumor cells are killed by RT and serve as an in-situ tumor vaccine by releasing tumor-associate antigens, which are captured by dendritic cells which then activate CD8+ T cells that home into tumors, activate systemic immunogenicity and control tumor proliferation. Natural Kiler cells are innate Lymphocytes that can directly eliminate target cells without prior exposures and play a key role in antiviral an antitumor immunity. In lung cancer, several approaches have been proposed to boost NK cell antitumor function. For example, IL-2, IL-15, and IL-18 can enhance the proliferation ability of NK cells, mainly IL-2 in NSCLC. Adoptive transfer of activated NK cells is the most direct mean to restore and improve the function of immune system. It has been tested that the adoptively transferred NK cells persisted in the peripheral circulation of patients and showed high levels of lytic activity, and with the use of an anti-KIR antibody, the malignant cells cannot evade NK activity. There was also a revision of 4 cases of lung cancer. The histology of the primary tumor was squamous cell carcinoma, LCNEC, and poorly differentiated NSC: C. It was administered PD-1 inhibitors, nivolumab or pembrolizumab. There was a wide range in the period from the start of immunotherapy to confirmation of small cell transformation. It is important to prove the existence of a common genetic background factor to define the histological transformation at cellular level. When NSCLC progresses after immunotherapy, the possibility of small cell transformation and rebiopsy should be taken into consideration.

Conclusions

There are many ways of immunotherapy for lung cancer, and that includes the use of drugs, molecular treatment, and even the combination with radiotherapy. But also, it's important to investigate in the future the adverse effects of immunotherapy in Lung cancer to avoid breathing complications, and a way to prevent those effects.