Analysis of Immunotherapy in triple negative breast cancer

Alamilla-Presuel JC[2], Burgos Molina AM[1], González Vidal A[2], Ruiz-Gómez MJ[2]

[1]*Department of Immunology, University of Málaga, Málaga Spain*
[2]*Department of Radiology and Physical Medicine, University of Málaga, Málaga Spain*

Introduction

Triple negative breast cancer (TNBC) accounts for 15-20% of all breast cancers, particularly in young women. TNBC is easily recognized by the immune system due to its high genetic instability and tumor mutational burden. The robust antitumor responses of immunotherapy in hematologic and solid malignancies bring hope to TNBC.

Objectives

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

Material and Methods

A wide PubMed search was performed using the keywords:
Immunotherapy, triple negative breast, and cancer. 400 articles were found. A systematic review during the last year was made.

Results

It has been demonstrated that D-mannose can target PD-L1 for degradation by impairing its glycosylation via AMPK activation. D-mannose decreased PD-L1 levels, and that prompted antitumor immunity and sensitized TNBC to radiotherapy. D-mannose decreases PD-L1 protein levels, disturbs PD-L1 glycosylation and stabilization by activating AMPK. Also, it has been proved that D-mannose promotes T cell activation and T cell killing of TNBC cells in vitro (2). It was demonstrated that overexpressed KAT6A is associated with TNBC metastasis. Fortunately, targeting KAT6A Sensitizes PD-L1 Immunotherapy in TNBC by decreasing Myeloid Derived Suppressor Cells recruitment. I was administered the inhibitor WM-119 and the results showed that the effects of the PD-L1 immunotherapy and the combination treatment could be beneficial to cancer patients with metastasis (3). Monoclonal antibodies are useful in immunotherapy for TNBC. Pembrolizumab binds to PD-1 and prevents the interaction between programmed death-1 in T cells and the ligand PD-L1 in tumor cells and the immune system is increased to eliminate abnormal effects in tumor cells. Another monoclonal antibody is Avelumab, which targets the programmed cell death ligand 1 receptor, it's a fully human IgG1 monoclonal antibody that binds to PD-L1.

Conclusions

TNBC cancer is complicated, most is about PD-L1 mechanism. Too many kinds of immunotherapy have been developed to treat TNCB. Nowadays, is complicated a fast and 100% accurate treatment for TNBC, because of cancer complications like metastasis. Nevertheless, metastasis is still being researched to prevent it and assure a better immunotherapy. Also, the immunotherapies must be improved too.