

The splendid future of CAR-NK cells in the treatment of gynecological cancers

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Abstract

NK cells are an innate class of lymphocytes in the human body that can achieve non-specific killing of tumor cells without MHC restriction or prior sensitization. In recent years, targeted killing of tumor cells has become possible due to the development of diverse biological technology, particularly the chemical chimeric antigen receptors (CAR), and other technologies. CAR gives NK cells a new magic, and its extracellular domains of the recognition region are usually single-chain antibodies (scFv), which can be targeted to specific antigens. CAR-NK cells have shown excellent results in several preclinical studies and clinical trials for hematologic malignancies. However, their clinical application in the treatment of solid tumors is still insufficient. Currently, the treatment of gynecological tumors relies mainly on surgery, chemotherapy, and radiotherapy, which are often accompanied by significant side effects and limited efficacy. CAR-T cell therapy has shown efficacy in certain gynecological tumors. However, side effects that are still urgent problems in clinical applications such as Graft-Versus-Host Disease (GVHD) and Cytokine Release Syndrome (CRS) have been observed. In contrast, CAR-NK cell therapy shows potential advantages in this area. Based on the above, this review mainly focuses on the development of CAR-NK cell constructs and their promising applications for immunotherapy of gynecological malignancies, aiming to provide references for clinical trials and clinical studies.

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