ABSTRACT/POSTER NUMBER 806

CB-20, an Induced Pluripotent Stem Cell (iPSC)-Derived Allogeneic CAR-NK Cell Therapy, Engineered for Enhanced Activity Against Solid Tumors

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Background

Cancer antigens present on malignant cells are recognized by the immune system and are the target for CAR-NK therapy. However, the presence of antigen-negative or antigen-low tumor cells can lead to therapeutic failure. Here, we report the characterization and clinical evaluation of CB-20, an allogeneic CAR-NK cell product that targets ROR1, a novel cancer antigen that is expressed on a wide range of tumor types.

Methods

CB-20 consists of allogeneic CAR-NK cells derived from iPSCs that expressed a CAR targeting ROR1. ROR1 is a transmembrane protein that is upregulated in various tumor types and is involved in cell motility and invasion. The use of iPSCs for CAR-NK cell production allows for the scalable and reproducible generation of tumor-specific CAR-NK cells.

Results

CB-20 demonstrated robust killing of ROR1-positive tumor cells in vitro and in vivo. In a mouse model, CB-20 was able to significantly reduce tumor burden and improve survival compared to control treatments. The CAR-NK cells exhibited high specificity for ROR1-positive cells, with minimal bystander killing of non-target cells.

Conclusions

CB-20 represents a promising therapeutic approach for the treatment of solid tumors expressing ROR1. The use of iPSCs for CAR-NK cell production enables the scalable and reproducible generation of tumor-specific CAR-NK cells, which can be used to address the limitations of antigen-negative or antigen-low tumor cells.

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