A NOVEL CD3/BCMA BISPECIFIC ANTIBODY SELECTIVELY KILLS PLASMA CELLS IN BONE MARROW OF HEALTHY INDIVIDUALS WITH IMPROVED SAFETY

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Aims The objective of this work was to analyse the in vitro and ex vivo killing potential of the bispecific antibody TNB-383B, for plasma cells in bone marrow samples of healthy individuals undergoing hip replacement. The bispecific antibody TNB-383B was designed to bind BCMA and CD3 with stronger affinity. Bone marrow mononuclear cells were incubated for 18 hours with controls and TNB-383B and samples were analyzed for plasma cell depletion (cells expressing CD19+, IgD-, IgM-, CD38++, CD27++) and T cell activation (CD69, CD107a, CD137, CD127++) and T cell activation (CD69, CD107a, CD137) using intracellular cytokine staining. A positive control was used to demonstrate the specificity of the antibody.

Results TNB-383B efficiently depleted plasma cells in bone marrow samples of healthy individuals undergoing hip replacement; more than 80% of BCMA expressing plasma cells were depleted after an overnight incubation with TNB-383B or a positive control. Analysis of activation markers showed that TNB-383B bound to CD3 with stronger affinity. Bone marrow mononuclear cells were incubated for 18 hours with controls and TNB-383B and samples were analyzed for plasma cell depletion and T cell activation. The best accuracy was achieved with independent samples. The accuracy of the model was evaluated using a receiver operating characteristic (ROC) curve with an area under the curve (AUC) of 0.88 and 0.86 respectively.

Conclusions The comprehensive SLE phenotype database constructed by NLP greatly improves the research efficiency of lupus clinical phenotype. We first proposed a predictive model of lupus nephritis, which is high applicability and efficiency. The experimental results of good close and open testing fully demonstrate the authenticity and practicality of this database. The research process and method based on real world data are also applicable to predict other important complications of lupus.

Funding Source(s): None