A Phase I Clinical Trial Combining CAR T-cell Therapy with Autologous Hematopoietic Stem Cells in a Multi-Cultural Patient Population

Bry Reinhardt, MD/MPH Candidate

Louisiana State University Health Sciences Center School of Public Health

LSU Health NEW ORLEANS School of Public Health

sph.lsuhsc.edu

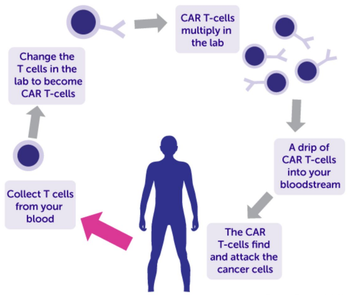
Background

Chimeric Antigen Receptor (CAR) T-Cell therapy is a type of immunotherapy designed to treat relapsed/refractory hematologic malignancies such non-Hodgkin B-Cell Lymphoma, B-Cell Acute Lymphoblastic Leukemia, and Multiple Myeloma. CAR T toxicities such as cytokine release syndrome, immune effector cell-associated neurotoxicity syndrome and post-infusion cytopenias pose major challenges to the regimen.

Additionally, CAR T is a complicated and involved therapy. It is critical to explain the risks and benefits to patients, which can be challenging when they are non-native English speakers.

We designed a phase 1 single-arm, open-label study to evaluate the safety and tolerability of autologous hematopoietic stem cells (HSCs) combined with CAR T-Cell therapy in patients with r/r NHL, ALL, or MM.

Mission



The co-primary objectives are to evaluate the safety and tolerability of autologous HSC infusion shortly after CAR T.

We aim to increase accessibility to this trial through creation of multilingual trial documents, educational materials, and community outreach.

Activities

Clinical Trial Documents

- Drafted the following:
  - Clinical trial protocol
  - informed consent form draft
  - Patient enrollment plan for physicians and clinical trial team
  - Guide for translating clinical trial protocols

Working with a Clinical Trial Team

- Worked with:
  - Study sponsor / PI
  - Cedars Sinai Medical Center SPIN group
  - Pharmaceutical company representatives
  - Biostatisticians
- Held regular meetings and collaboratively wrote and revised trial documents

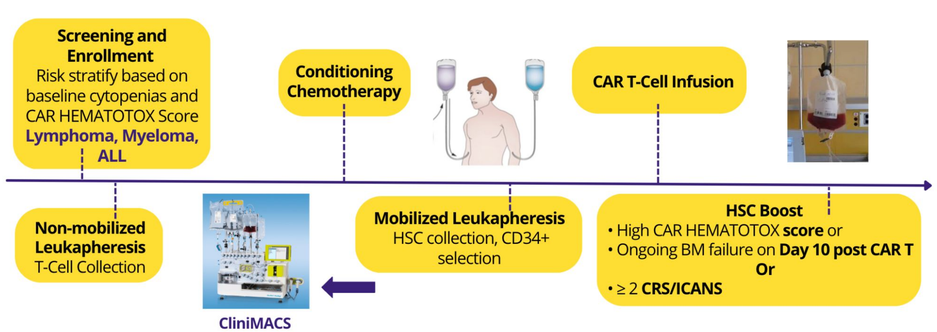
Educating Patients and the Medical Community on Cell Therapy

- Drafted informative fliers to educate patients on cell therapy science, procedures, and clinical risks/benefits
- Created a plan to educate physicians on trial
- Presented clinical trial to Hematology & Cellular Therapy Department

Accomplishments

Tasks	Completed
Clinical Trial Protocol	✅
Informed Consent Form	✅
Cell Therapy Flier	✅
Protocol for Translating Informed Consent Form	✅
Clinical Trial Presentation	✅
Patient Recruitment & Education Plan	✅

Results



Primary Endpoint

- Assessing safety and tolerability through collection of adverse events:
  - Immune cell activation neurotoxicity syndrome (ICANS)
  - Cytokine release syndrome (CRS)
  - Macrophage activation syndrome (MAS)
  - Febrile neutropenia
  - Cytopenia
  - Infections

Secondary Endpoints

- Absolute neutrophil count (ANC) recovery by Day 28
- Red blood cell and platelet transfusion independence by Day 28
- Median progression free survival and overall survival
- Days of hospitalization

Discussions

- Cedars Sinai Medical Center approved this trial in early 2023, and we aim to enroll patients within the next 6 months.
- We are working with other physicians to increase clinical trial access and enrollment.
- We created educational flyers explaining CAR T-cell therapy to patients and translated our consent forms into Spanish.

Future Steps

- Find, screen and enroll patients
- Conduct trial
  - Treat patients, monitor safety and collect data
- Evaluate primary and secondary study objectives
- Assess community outreach strategies and effectiveness of educational materials through collection of patient feedback

References

Acknowledgement

- A special thank you to Dr. Joshua Sasine who served as the preceptor and mentor for this project. Dr. Sasine dedicated countless hours to teaching and planning.
- Cedar Sinai Medical Center, which sponsored Bry Reinhardt as a research intern this summer.
- Dr. John Chute who helped fund this study and served as another mentor.