METHODS

Late TBI-1301 (mipetresgene autoleucel) is a novel gene therapy for the treatment of advanced synovial sarcoma (SS), a rare type of sarcoma that occurs in young adults. SS is characterized by the expression of the NY-ESO-1 antigen, which is a hydrophobic cancer-testis antigen and expressed in 50-80% of SS patients. NY-ESO-1 antigen is a target for adoptive immunotherapy, and several studies have shown promising results using NY-ESO-1-specific TCR gene-transduced T cell therapy.

The study was conducted as an open-label phase I study to evaluate safety, response, and cytokine release syndrome (CRS). The key eligibility criteria were as follows:
- Age ≥ 18 years
- Histologically diagnosed advanced or recurrent SS
- NY-ESO-1 antigenic expression in the tumor tissue
- No active metastatic disease in the central nervous system
- Performance status of 0-2
- No significant autoimmune disease
- Previous cytotoxic chemotherapy and immunotherapy permitted
- At least 14 days and 21 days, respectively, between prior chemotherapy and study treatment

A total of 13 patients were enrolled in the study: 11 patients (including 1 patient from the dose-escalation phase) and 2 patients from the dose-confirmation phase. The median age of the patients was 53 years (range 21-61). The majority of patients (76.9%) had at least one prior chemotherapy regimen. NY-ESO-1 antigen expression was negative in all patients. The median percentage of NY-ESO-1-specific TCR expression was 9.1% (range 1.2-25%).

The primary endpoints were safety and efficacy. Safety was assessed by monitoring adverse events (AEs), laboratory parameters, and vital signs. Efficacy was assessed by evaluating the overall response rate (ORR), partial response (PR), and stable disease (SD). The median PFS according to RECIST version 1.1 was 227.0 days, and the median OS was 650.0 days.

The most common AEs were related to cytokine release syndrome and were well managed with tocilizumab and corticosteroids. There were no deaths or study discontinuations due to AEs.

CONCLUSION

TBI-1301 (mipetresgene autoleucel) is a promising therapy for advanced synovial sarcoma. Further studies are needed to evaluate the long-term efficacy and safety of this treatment.