Overview of the Hematology/Oncology PRN

The Hematology/Oncology Practice and Research Network (PRN) was established in 1994 to improve professional collaboration among clinical pharmacists who practice in hematology and oncology settings. As of November 2017, the PRN has 892 members, and trainees make up almost 50% of its membership. The PRN focuses on developing and promoting the growth of the hematology/oncology clinical pharmacy profession involving hematology/oncology clinical pharmacists, students, residents, and fellows in their education, projects, and initiatives. The PRN also supports the Frontiers Fund with annual donations.

Opportunities for Residents and Fellows

The Hematology/Oncology PRN supports travel to the ACCP meeting for hematology/oncology residents and pharmacy students. Annually, the PRN offers students and residents the opportunity to apply for travel grant awards seeking to foster research and general engagement with the oncology specialty. The pharmacy residents and students who receive travel support to the ACCP meeting are invited to present a research project at the ACCP Annual Meeting PRN business meetings and networking forums. Recently, the PRN developed an advisory committee to assist in leading various initiatives and generating opportunities for all members. This committee is composed of both practicing pharmacists and learners, allowing students, residents, and fellows to interact regularly with specialist mentors to drive forward the PRN's goals. Learners are encouraged to express interest in continued and further PRN involvement and to look forward to further opportunities for ongoing engagement.

Hematology/Oncology Clinical Issue

Acute lymphoblastic leukemia (ALL) is characterized by immature lymphoid cell proliferation within the bone marrow. According to estimates of the SEER (Surveillance, Epidemiology, and End Results) program, 5970 new cases of ALL will occur in 2017, with 1440 patients dying of the disease. Progress in the treatment of children has been significant over the past 5 decades, with cure rates now approaching 90%. However, adolescents and young adults treated with pediatric-inspired protocols have not enjoyed the same response to chemotherapy, with a 5-year survival rate of 42%–63%. Precursor B-cell ALL (B-ALL) is a malignant hematologic neoplasm derived from B-cell progenitors. Most patients will respond to conventional induction chemotherapy; however, 50% of patients will relapse.[1]

CD19 is the earliest B-lineage antigen expressed at all stages of B-cell development apart from plasma cells, thereby making it a target of interest in B-cell malignancies. Tisagenlecleucel is a first-in-class chimeric antigen receptor (CAR) T-cell therapy that consists of an antibody-derived extracellular single-chain variable fragment that recognizes CD19 linked to the intracellular T-cell signaling domain of the T-cell receptor. Tisagenlecleucel is a second-generation CAR T-cell therapy that includes a 4-1BB costimulatory receptor protein that enhances the expansion and persistence of CAR T-cells. Tisagenlecleucel is indicated for the treatment of patients up to 25 years of age with ALL that is refractory or in second or later relapse.[2]

Tisagenlecleucel therapy produced high response rates in a pediatric and young adult population, prompting the phase II ELIANA trial of tisagenlecleucel in pediatric and young adult patients with $CD19^{+}$ relapsed and refractory B-cell ALL confirmed by the presence of 5% or more bone marrow blasts. Eighty-eight patients were enrolled at the time of interim analysis, and the primary end point was overall remission rate, as defined by complete remission (CR) and CR with incomplete count recovery within 3 months. The median age was 12 years, and 59% of the patients had prior allogeneic hematopoietic stem cell transplantation (allo SCT). Most patients (65 of 68) were treated with lympho-

depleting chemotherapy before T-cell infusion. Among 63 evaluable patients, 83% achieved CR or CRi (complete remission with incomplete hematologic recovery) within 3 months, all of whom were MRD (minimum residual disease) negative. The probability of survival was 89% at 6 months and 79% at 12 months, with 13% of responders proceeding to allo SCT. Cytokine release syndrome (CRS) occurred in 78% of patients; however, there were no CRS-associated deaths.[3]

Several black box warnings are related to CRS and neurotoxicity associated with the drug. Tisagenlecleucel is only available through a restricted program (REMS).[2] Because of the toxicities, pharmacists need to be part of a multidisciplinary team caring for CRS or neurotoxicity and know appropriate management strategies (anti–IL-6 medications such as tocilizumab and siltuximab and use of corticosteroids in selected patients).

References:

1. National Comprehensive Cancer Network (NCCN) Guidelines. Acute Lymphoblastic Leukemia Version 5.2017. October 2017. Available at https://www.nccn.org/professionals/physician_gls/pdf/all.pdf. Accessed January 31, 2018. Subscription required.
2. Kymriah [package insert]. East Hanover, NJ: Novartis, 2017.
3. Buechner J, Grupp SA, Maude SL, et al. Global registration trial of efficacy and safety of CTL019 in pediatric and young adult patients with relapsed/refractory (R/R) acute lymphoblastic leukemia (ALL): update to the interim analysis. Presented at: European Hematology Association Annual Meeting. Abstract S476. June 24, 2017.