6537 General Poster Session (Board #14D), Mon, 1:15 PM-5:15 PM

Low day 100 transplant-related mortality (TRM) and relapse rate following clofarabine (CLO) in combination with cytarabine, total body irradiation (TBI), and allogeneic stem cell transplantation (AlloSCT) in children, adolescents, and young adults (CAYA) with poor-risk acute leukemia.

Kavita Radhakrishnan, Angela M Ricci, Mark B Geyer, Lauren Harrison, Deirdre Duffy, Mehmet Fevzi Ozkaynak, Prakash Satwani, Alexandra C Cheerva, Julie Talano, Theodore Moore, Alfred P Gillio, Randal K. Wada, Lee Ann Baxter-Lowe, Mitchell S. Cairo; New York Medical College, Valhalla, NY; Columbia University, New York, NY; Massachusetts General Hospital, Harvard University, Boston, MA; University of Louisville, Louisville, KY; Medical College of Wisconsin, Milwaukee, WI; UCLA Medical Center, Los Angeles, CA; Hackensack University Medical Center, Hackensack, NJ; University of Hawaii, Honolulu, HI; University of California, San Francisco, San Francisco, CA

Background: CAYA with ALL or AML in third complete remission (CR3), refractory relapse (RR) or induction failure (IF) have an extremely poor prognosis, <20% EFS (Gaynon, BJH, 2005;Wells, JCO, 2003). CLO, an inhibitor of DNA polymerase and ribonucleotide reductase, has significant activity in CAYA with relapsed ALL/AML (Jeha, JCO 2006,2009) and synergy with cytarabine (Faderl, Blood, 2005). We sought to determine safety, day-100 TRM, and overall survival (OS) associated with CLO, cytarabine and TBI followed by AlloSCT in CAYA with poor-risk ALL/AML. **Methods:** This is a multi-center phase I/II trial of a novel conditioning regimen of CLO (dose escalation: 40mg/m^2 [n=3], 46 mg/m^2 [n=3], 52 mg/m^2 [n=19]) x5d, sequential (4 hrs later) cytarabine 1000 mg/m^2 x6d and TBI (1200cGy) followed by AlloSCT from matched related or unrelated donors in CAYA with ALL/AML in CR3, RR or IF. Patients with unrelated donors received R-ATG. GVHD prophylaxis consisted of tacrolimus and MMF (Bhatia/ Cairo, BBMT, 2009). Kaplan-Meier method was used to determine the probabilities of engraftment, GVHD, TRM and OS. **Results:** 25 pts, median age: 11.3 yrs (1.5-20.7); M:F: 19:6, ALL/AML: 22:3 (10 CR3, 3 RR, 12 IF), 10 related donors, 15 unrelated donors (9 BM/PBSCs, 6 UCB). Median TNC and CD34 dose was 4.47x10^8/kg and 4.84x10^6/kg for BM/PBSCs and 4.0x10^7/kg and 2.8x10^5/kg for UCB, respectively. Probabilities of neutrophil, platelet engraftment and grade II-IV aGVHD were 100%, 92.9% and 47.5%, respectively. CLO dose was tolerable at 52mg/m^2/d x5d without dose limiting toxicity. Probability of Day 100 TRM was only 4.3%. Probability of 1-yr PFS and OS were 51% (CI_{95}: 28-71%), and 43% (CI_{95}: 22-63%) respectively. **Conclusions:** Preliminary results suggest this novel regimen followed by AlloSCT is safe and well tolerated in CAYA with poor-risk ALL/ AML with CLO dose 52 mg/m^2. Results are encouraging with respect to low risk of day 100 TRM and leukemic relapse associated with this conditioning regimen in this poor-risk population.