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POSTER ABSTRACTS

705.CELLULAR IMMUNOTHERAPIES: LATE PHASE AND COMMERCIALLY AVAILABLE THERAPIES

Use of Eltrombopag for Post-CAR T Cytopenias: A Multi-Institutional Experience

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Background: Cytopenias following chimeric antigen receptor T (CAR T) cell therapy are common and can be profound and/or prolonged, leading to increased morbidity and mortality. Supportive care is the mainstay of management but strategies to reduce the duration and severity of cytopenias have yet to be optimized. One such strategy extrapolated from experience in aplastic anemia is the use of thrombopoietin (TPO) receptor agonists, like eltrombopag. Eltrombopag has been used off-label for several years for this indication, however, limited data exists regarding the safety and efficacy of its use after CAR T-cell therapy.

Methods: Patients ≥ 18 years of age treated with CAR T-cell therapy for either lymphoma or myeloma at two academic medical centers between January 2018 and January 2023 were included in a retrospective analysis. Use of eltrombopag was initiated at the KUMC for patients who had received CAR T and subsequently had persistent cytopenias at day +30 as evidenced by at least one of four criteria: grade 3 or 4 leukopenia, grade 4 thrombocytopenia, growth factor dependency, or platelet transfusion dependency. Use of eltrombopag was initiated at the MUSC for patients who had received CAR T and had grade 4 thrombocytopenia at day +21 and beyond post-CAR T infusion. Baseline patient and disease characteristics as well as variables describing safety and efficacy of eltrombopag for the treatment of persistent high-grade leukopenia and/or thrombocytopenia beyond day +21 post CAR T infusion were collected and summarized using descriptive statistics.

Results: A total of 185 patients were included in this analysis. Of these, 163 (88%) experienced thrombocytopenia or leukopenia at day +30 post-CAR T infusion. A total of 42 patients met institutional criteria for eltrombopag treatment and initiated therapy. Median time to initiation of eltrombopag was 33 days (range 28-50) from infusion, with no significant differences between the two institutions (30 days at KUMC vs 36 days at MUSC, p=0.19). Median duration for the use of eltrombopag was 63 days (range 32-172) and KUMC used eltrombopag for a longer duration than MUSC (108 days vs 32 days, p=0.03). There were no statistically significant differences in bleeding events in the eltrombopag vs non-eltrombopag groups, p=0.053, and no reported cases of deep vein thrombosis or pulmonary embolism (DVT/PE) after initiating eltrombopag. Patients on eltrombopag were more likely to have infections (24 (57%) vs 42 (35%), p<0.01) and admission to intensive care unit (16 (38%) vs 20 (17%), p<0.01) when compared to the non-eltrombopag group. At day +30, 74 (45%) patients in the entire study population had grade 3 or higher leukopenia or thrombocytopenia, with 39 (93%) and 25 (29%) patients in the eltrombopag and non-eltrombopag groups with grade 3 or higher cytopenias, respectively (p<0.001). By day +90, only 18 (35%) patients in the evaluable population had grade 3 or higher leukopenia or thrombocytopenia, with 12 (50%) and 6 (22%) patients in the eltrombopag and non-eltrombopag groups with grade 3 or higher cytopenias, respectively (p=0.046). By day +180, all but ten patients in the evaluable population had not recovered to less than a grade 3 cytopenia with no significant difference in cytopenias between the two groups.

With a median follow up of 12 months (range 1-34) for the entire patient population, median PFS was lower for the eltrombopag group (13 months) compared to the non-eltrombopag group (16 months, p=0.02). When stratified by disease, this association was observed only for the lymphoma patients, with a median PFS of 8.5 months in the eltrombopag group compared to a median PFS of 17 months in the non-eltrombopag group, p=0.01 (Table 1). Similarly, for the entire patient population, median OS was lower for the eltrombopag group (14 months) compared to the non-eltrombopag group (18 months, p=0.01). When stratified by disease, this association was observed only for the lymphoma patients, with a median OS of 14 months in the eltrombopag group compared to 18 months in the non-eltrombopag group (p<0.01).

Conclusions: In this first of its kind real-world experience, use of eltrombopag for post-CAR T leukopenia and thrombocytopenia was considered effective in recovery of counts and prevention of bleeding in a high-risk patient population. The use of eltrombopag for post-CAR T cytopenias was considered safe without any significant toxicities of thrombosis or myelodysplasia.

Disclosures Ahmed: *BMS:* Consultancy; *Kite:* Consultancy, Research Funding. **Hoffmann:** *TG Therapeutics:* Consultancy, Honoraria; *Kite:* Consultancy, Honoraria; *ADC Therapeutics:* Consultancy, Honoraria; *Novartis:* Consultancy, Honoraria, Membership on an entity's Board of Directors or advisory committees; *Pharmacyclics:* Consultancy, Honoraria; *AbbVie:* Consultancy, Honoraria; *Janssen:* Consultancy, Honoraria; *Genentech:* Consultancy, Honoraria, Membership on an entity's Board of Directors or advisory committees, Research Funding; *AstraZeneca:* Consultancy, Honoraria; *BeiGene:* Consultancy, Honoraria. **Hashmi:** *GSK:* Honoraria, Speakers Bureau; *Sanofi:* Honoraria, Speakers Bureau; *Karyopharm:* Speakers Bureau; *BMS:* Honoraria; *Jannsen:* Honoraria, Speakers Bureau.

OffLabel Disclosure: Eltrombopag is a thrombopoietin agonist with indications for thrombocytopenia in aplastic anemia and hepatitis c. We describe its off-label use in management of cytopenias following CAR T therapy.

Table 1. Demographic and Outcome n (%)		All patients (n=185)	Received eltrombopag (n=44)	Did not receive eltrombopag	p - value
Gender					
	Male	102 (55)	23 (52)	79 (56)	0.729
	Female	83 (45)	21 (48)	62 (44)	
Race					
	White	151 (82)	39 (89)	112 (79)	0.243
	Black	27 (15)	3 (7)	24 (17)	
	Other	7 (4)	2 (5)	5 (4)	
Age					
	Median Years (25%-75% quartile)	64 (58-70)	62 (57.3-68.8)	65 (58-70)	0.500
Product					
	Axicabtagene Ciloleucel	76 (41)	18 (41)	58 (41)	0.490
	Tisagenlecleucel	24 (13)	5 (11)	19 (13)	
	Lisocabtagene Maraleucel	17 (9)	2 (5)	15 (11)	
	Brexucabtagene Autoleucel	10 (5)	1 (2)	9 (6)	
	Ciltacabtagene Autoleucel	14 (8)	5 (11)	9 (6)	
	Idecabtagene Vicleucel	44 (24)	13 (30)	31 (22)	
Indication					
	Lymphoma	127 (69)	26 (59)	101 (72)	0.138
	Myeloma	58 (31)	18 (31)	40 (28)	
Previous Lines					
	1	13 (7)	2 (5)	11 (8)	0.682
	2	70 (38)	14 (32)	56 (40)	
	3	25 (14)	6 (14)	19 (13)	
	4	13 (7)	3 (7)	10 (7)	
	5+	64 (35)	19 (43)	45 (32)	
Bridging Therapy					
	Yes	139 (75)	38 (86)	101 (72)	0.071
	No	46 (25)	6 (14)	40 (28	
ICU Admission					
	Yes	36 (22)	16 (38)	20 (17)	**0.013**
	No	127 (78)	26 (62)	101 (83)	
MDS Post CAR T					
	Yes	5 (4)	3 (9)	2 (2)	0.164
	No	110 (96)	32 (91)	78 (98)	
Bleeding events					
	Yes	4 (2)	3 (7)	1 (1)	0.053
	No	159 (98)	39 (93)	120 (99)	
Infection					
	Yes	66 (40)	24 (57)	42 (35)	**0.018**
	No	97 (60)	18 (43)	79 (65)	
PFS, months		15 (5-19)	13 (3-16)	16 (6-20)	**0.016**
OS, months		17 (13-22)	14 (7-18)	18 (14-23)	**0.013**
PFS for Lymphoma, months		15 (4-20)	8.5 (1.5-15)	17 (6-20)	**0.010**
PFS for Multiple Myeloma, months		16 (6-16)	16 (4-16)	16 (7-16)	0.470
OS for Lymphoma, months		17 (14-23)	14 (3-15)	18 (14-23)	**0.002**
OS for Multiple Myeloma, months		13 (13-18)	13 (13-18)	NR	0.832

Abbreviations used: ICU – intensive care unit, MDS – myelodysplastic syndrome, PFS – progression free survival, OS – overall survival, NR – not reached

Figure 1

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