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Cost and Efficacy of Upfront Plerixafor Versus a "Just-in-Time" (JIT) Approach in Hematopoietic Progenitor Cell (HPC) Mobilization

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Abstract

HPC mobilization with plerixafor (Plex) plus G-CSF (G+P) results in superior CD34+ cell yield, when compared to mobilization with G-CSF alone in patients with myeloma and lymphoid malignancies. However, Plex-based approaches are associated with high mobilization costs. To circumvent higher costs, several institutions use a so-called JIT approach, where Plex is only administered to patients likely to fail mobilization with G-CSF alone. Whether such a JIT-Plex approach is cost effective has not been confirmed to date. We present here, a single institution comparative analysis of 137 patients with myeloma and lymphoma who underwent mobilization with 2 different approaches of Plex utilization. Between Jan 2010-Oct 2012 (n=77) patients received mobilization G-CSF (10 µg/kg) for 5 days and Plex (0.24 mg/kg) on the evening of day four, 11 hours before apheresis the following day (G+P). To reduce mobilization costs between Nov 2012-Jun 2014 (n=60) patients were mobilized with JIT-Plex where Plex was only administered to patients likely to fail mobilization with G-CSF alone (i.e. patients with a day 4

peripheral blood (PB) CD34+ count of <10/μL, or those with day 1 yield of < 1.0 X 10^6 cells/kg or day 1+2 yield of <1.5 X 10^6 cells/kg ABW. Mobilization failure was defined as inability to collect at least 2 X 10^6 /kg CD 34+ cells. Patients in G+P had a higher mean peak PB CD34+ cell count (77 vs. 33.1 cells/μL, p<0.001) and a higher mean CD34+ cell yield on day 1 of collection (4.4 X 10^6 vs. 2.4 X 10^6 cells/kg ABW, p=0.0005). The mean total CD34+ cell collection was also higher in G+P (6.64 X 10^6 vs. 4.81 X 10^6 cells/kg ABW, p=0.0068). In the JIT-Plex group 41% (n=24) completed adequate HPC collection without Plex. Mobilization failure was noted in 5 patients in the G+P group (3 were salvaged with bone marrow harvest) and 2 patients in the JIT-Plex group. Two patients in either group did not proceed to AHCT as a result of mobilization failure. The mean Plex doses utilized in JIT-Plex was lower (1.3 vs. 2.1, p=0.0002), however 21% (n=16) in the G+P group completed apheresis on day 1 compared to only 6.9% (n=4) in JIT-Plex, p=0.0094. Cost analysis was estimated based on actual sales price (actual wholesale price AWP – (AWP X 0.2)) for mobilization agents and the United states (US) Department of Health and Human Services Centers for Medicaid Services (HHS/CMS) reimbursement rates for procedural costs associated with mobilization, apheresis or cryopreservation. The mean estimated cost was higher in the G+P group ($28,448 vs. $24,852, p=0.0315). Our analyses, for the first time confirms that mobilization with JIT-Plex allows for a safe, adequate and cost efficient strategy for HPC collection.

Baseline Patent Characteristics at Time of Mobilization

Table

	Mobilization Strategy		
	Upfront Plerixafor + G-CSF (n=77)	G-CSF + Just-in-time Plerixafor (n=60)	p-value
Disease *Myeloma* *Lymphoma*	46 (60%) 31 (40%)	30 (50%) 30 (50%)	0.29
Mean age, years (range)	58 (23-75)	57 (22-75)	0.45
Male gender	42 (55%)	33 (57%)	0.92
Race: Caucasian	73 (97%)	57 (98%)	1.0
Lines of prior therapy, mean	1.5	1.8	0.3
Prior Radiation	13 (18%)	12 (21%)	0.66
Mean KPS (range)	80 (70-100)	80 (60-100)	0.75
HCT-CI Score (mean)	2	2	0.36

Abbreviations: G-CSF-granulocyte-colony stimulating factor (filgrastim); KPS-Karnofsky performance status; HCT-CI- hematopoietic cell transplantation-specific comorbidity index

Disclosures

No relevant conflicts of interest to declare.

Author notes

*Asterisk with author names denotes non-ASH members.

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