CORRESPONDENCE

Packed Red Blood Cells and Platelet Transfusion Support in Patients Undergoing Bone Marrow Transplantation: Analysis of 82 Cases

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To the editor,

Bone marrow transplantation (BMT) is considered to be a high volume blood product consuming procedure [1]. Leucodepletion and irradiation required during BMT add up to the cost. There is lack of Indian data on transfusion burden in BMT setting. Recently, Datta et al. [2] have presented their data on this topic. We did a retrospective audit of our BMT data regarding requirement of packed red blood cells (PRBCs) and platelet transfusions up to 6 months post BMT.

In our hospital bone marrow transplant program was started 4 years back. One hundred twenty two BMTs have been performed so far. Data is presented for 82 patients. We transfuse PRBCs when haemoglobin level is less than 7 g/dl or patient is hemodynamically unstable. Platelet transfusions were indicated if a patient had bleeding, had platelet count <10,000 or <20,000/cmm in case of fever. All the patients received leucodepleted irradiated PRBCs. Platelet transfusions were mostly single donor platelets (SDPs) which were irradiated. Sometime Random donor platelets (RDPs) were used when suitable donors were not available for SDP. Patients were divided into autologous and allogeneic BMT group. Allogeneic group were further subdivided into matched sibling donor (MSD), matched unrelated donor (MUD) and haploidentical BMT based on their differing requirements for conditioning regimen, stem cell source and engraftment patterns. Table 1 shows the

transfusion requirement in different groups. There were 37 autologous BMTs (25 Multiple myeloma, 1 waldenstroms macroglobulinemia, 3 neuroblastoma, 8 lymphomas). There were 45 allogeneic BMTs [25 benign (12 thalassemia major, 5 aplastic anemia, 2 diamond blackfan anemia and 1 patient each with osteopetrosis, Hurler syndrome, Griscelli syndrome, fanconi anemia, paroxysmal nocturnal hemoglobinuria and sickle cell anemia) and 20 malignant (12 acute leukemia, 5 chronic myeloid leukemia, 3 myelodysplastic syndrome)]. Twenty-seven had ABO compatible donor, 9 had minor incompatibility, 7 had major incompatibility and 2 had bidirectional incompatibility. We have earlier demonstrated that ABO incompatibility did not affect transfusion requirement in these patients [3]. Two patients received bone marrow grafts. Rest all had a peripheral blood stem cell graft. Median hematopoietic stem cell dose infused was much higher in haploidentical and MUD BMTs vs MSD and autologous BMT (Table 1). Only two patients required transfusions after 30 days of BMT. One child who received MSD BMT received PRBC beyond day 30 till day 42 and received total 28 PRBCs, 2 SDPs and 142 RDPs due to hemorrhagic cystitis. One adult patient who underwent haploidentical BMT received total 12 PRBCs, 2 SDPs and 35 RDPs till Day 180 of BMT due to hemorrhagic cystitis.

This also breaks the myth that transfusion requirements are high during BMT except haploidentical BMTs [1]. Sticking to guidelines also helps minimise transfusions. If a patient develops a complication like hemorrhagic cystitis, both platelet and PRBC transfusion requirements increase drastically as was seen in our 2 patients. It is possible that larger sample size may demonstrate other factors predictive of transfusion requirement in BMT patients. These data help patients and doctors plan better as they may anticipate the transfusion requirements, donors and costs associated.

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Table 1 Transfusion requirement in BMT patients till day 30 of BMT

	Autologous (37)	Allogeneic (45)		
		MSD (36)	MUD (4)	Haploidentical (5)
Age (years)	47 (4–68)	12.5 (2–58)	23 (10–40)	11 (1.3–53)
CD 34 dose ($\times 10^6/\text{kg}$)	2.75 (1.22–17)	5.01 (2.1–15.9)	8.28 (2.96–10.68)	8.33 (5.8–11)
Median (range)				
PRBC	1 (0–12)	5 (0–28)	5.5 (0–8)	4 (1–20)
Median (range)				
SDP	2 (0–8)	0.75 (0–5)	1.5 (0–7)	2 (0–8)
Median (range)				
RDP	4 (0–57)	13.5 (0–142)	20.5 (0–63)	23 (4–78)
Median (range)				
Neutrophil engraftment (days)	11 (9–35)	14 (10–25)	14 (13–21)	14 (14–28)
Median (range)				
Platelet engraftment (days)	12 (10–65)	16.5 (10–39)	15 (11–27)	65.5 (14–117)
Median (range)				

BMT bone marrow transplantation, *MSD* matched sibling donor, *MUD* matched unrelated donor, *PRBC* packed red blood cell, *RDP* random donor platelets, *SDP* single donor platelets

Compliance with Ethical Standards

Conflict of interest None.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors.

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