

Table S1. Clinical characteristics of HSCT-associated PVOD

No.	Age (y)/sex	Clinical diagnosis	Pre-transplant therapy	Transplant conditioning therapy	Donor source	GVHD	SOS	Onset of post- HSCT PVOD (d)	Biopsy or autopsy	Infection before PVOD onset	Outcome	Reference
1	36/F	ALL	DNR	CY, L-PAM, VP-16, TLI, TBI	uBM	–	+	6	–	–	Alive +27 d	1
2	48/M	MM	VCR, DXR, DEX	L-PAM	Auto PBSC	NA	–	11	–	NA	Alive +49 d	2
3	1/M	NB	CY, VCR, DXR, CDDP, VP-16, TBI	CBDCA, VP-16, L-PAM	Auto PBSC	NA	–	13	+	–	Dead	3
4	21/M	AML	IDR, Ara-C, DNR	GO, FLU, L-PAM, TBI	uBM	–	–	35	–	–	Dead	4
5	12/M	ALL	CY, PSL, Ara-C, VCR, DNR	CY, TBI	rBM	aGVHD	+	44	+	<i>P. aeruginosa</i> pneumonia (d32)	Dead	5
6	4/F	ALL	CY, MTX, PSL, Ara-C, VCR, DNR, L-asp	CY, BU, MTX, VP-16, BCNU, TBI	rBM	Subclinical (cGVHD)	NA	46	+	No evidence of viral pneumonia	Dead (relapse)	6
7	39/M	NHL	CY, DXR, VCR, PSL, Ara-C, VP- 16, CDDP	CY, VP-16, BCNU, DTIC	Auto BM	NA	–	52	+	NA	Dead	7
8	0/M	ALL	DEX, VCR, AraC, DNR, L-asp, MTX, VP-16, CY	BU, CY, VP-16	CB	NA	+	53	–	MRSE bacteremia (d7)	Alive +350 d	8
9	0/F	AML	NA	BU, L-PAM Flu, L-PAM, TBI	CB	–	–	11 (58)*	+	<i>Staphylococcus</i> <i>epidermidis</i>	Dead	9
10	4/M	ALL	CY, MTX, PSL, Ara-C, VCR, DNR, L-asp, VP-16, tenoposide, 6-MP, TBI	CY, VP-16, BCNU	rBM	–	+	60	–	No evidence of viral pneumonia	Alive +230 d	6
11	51/F	AML	NA	CY, FLU, TBI	CB	–	NA	60**	+	–	Alive +8 m	10
12	5/F	NB	VCR, THP, CY, CDDP	BU, L-PAM	Auto PBSC	–	+	73	–	NA	Alive +2 y	11
13	20/M	NHL	CY, DXR, VCR, PSL, CBDCA, Ara-C, MIT	CY, Ara-C, TBI	rBM	–	+	73	+	NA	Dead	12
14	20/M	NHL	CY, VCR, PSL, DXR, MTX, Ara-C, L-asp, DEX	L-PAM, TEPA, FLU, ATG	PBSC	NA	–	77	–	CMV pneumonia, RSV infection	Dead +141 d	13

15	26/F	AML	Ara-C, IDR, midostaurin	TEPA, FLU, TBI, ATG	NA	aGVHD	NA	92	+	-	Dead	14
16	21/F	AML	IDR, Ara-C	CY, FLU, TBI	CB	Suspected	NA	138	-	-	Alive +998 d	10
						(cGVHD)						
17	49/F	CML	IFN- α	CY, TBI	PBSC	-	NA	168	-	NA	Dead	15
18	24/M	ALL	CY, DXR, VCR, PSL, MTX, Ara-C, L-asp, BCNU, ACT-D, 6-MP	NA	uBM	-	NA	180	+	NA	Alive +360 d	16
19	19/F	ALL	NA	CY, Ara-C, BU, VP-16, L-PAM, MIT, TBI	rBM	cGVHD	-	342	+	Pulmonary aspergillosis (autopsy)	Dead	17
20	4/M	NB	CY, CDDP, VCR, THP, TMZ, CPT- 11	BU, L-PAM, FLU, TBI	Auto PBSC +CB	aGVHD: grade 3	-	231	+	RSV infection	Dead	Present case

*The patient experienced pulmonary hypertension on day 11 that was successfully treated with inhaled nitric oxide and tadalafil. However, pulmonary hypertension recurred on day 58. An autopsy revealed the PVOD findings.

**Originally described as 2 months.

Abbreviations: ACT-D, actinomycin D; aGVHD, acute graft-versus-host disease; ALL, acute lymphoblastic leukemia; AML, acute myeloid leukemia; Ara-C, cytarabine; ATG, anti-thymocyte globulin; Auto, autologous; BCNU, bis-chloroethyl nitrosourea; BU, busulfan; CB, cord blood transplantation; CBDCA, carboplatin; CDDP, cisplatin; cGVHD, chronic graft-versus-host disease; CML, chronic myeloid leukemia; CMV, cytomegalovirus; CPT-11, irinotecan; CY, cyclophosphamide; DEX, dexamethasone; DNR, daunorubicin; DTIC, dacarbazine; DXR, doxorubicin; F, female; FLU, fludarabine; GO, gemtuzumab ozogamicin; HSCT, hematopoietic stem cell transplantation; IDR, idarubicin; IFN- α , interferon- α ; L-asp, L-asparaginase; L-PAM, melphalan; M, male; MIT, mitoxantrone; MM, multiple myeloma; MTX, methotrexate; NA, not available; NB, neuroblastoma; NHL, non-Hodgkin lymphoma; PBSC, peripheral blood stem cell; PSL, prednisolone; PVOD, pulmonary veno-occlusive disease; rBM, related bone marrow; RSV, respiratory syncytial virus; SOS, sinusoidal obstruction syndrome; TBI, total body irradiation; TEPA, thiotepa; THP, pirarubicin; TLI, total lymphoid irradiation; TMZ, temozolomide; uBM, unrelated bone marrow; VCR, vincristine; VP-16, etoposide; 6-MP, mercaptapurine

References

- Or R, Nagler A, Elad S, Naparstek E, Schechter D. Noncardiogenic pulmonary congestion following bone marrow transplantation. *Respiration*. 1997;64(2):170-2. doi: 10.1159/000196664.
- Malhotra P, Varma S, Varma N, Sharma RR, Jain S, Kumari S, et al. Pulmonary veno-occlusive disease as a cause for reversible pulmonary hypertension in a patient with multiple myeloma undergoing peripheral blood stem cell transplantation. *Am J Hematol*. 2005;80(2):164-5. doi: 10.1002/ajh.20416.
- Trobaugh-Lottrario AD, Greffe B, Deterding R, Deutsch G, Quinones R. Pulmonary veno-occlusive disease after autologous bone marrow transplant in a child with stage IV neuroblastoma: case report and literature review. *J Pediatr Hematol Oncol*. 2003;25(5):405-9. doi: 10.1097/00043426-200305000-00011.
- Hosokawa K, Yamazaki H, Nishitsuji M, Kobayashi S, Takami A, Fujimura M, et al. Pulmonary veno-occlusive disease following reduced-intensity allogeneic bone marrow transplantation for acute myeloid leukemia. *Intern Med*. 2012;51(2):195-8. doi: 10.2169/internalmedicine.51.6302

5. Troussard X, Bernaudin JF, Cordonnier C, Fleury J, Payen D, Briere J, et al. Pulmonary veno-occlusive disease after bone marrow transplantation. *Thorax*. 1984;39(12):956-7. doi: 10.1136/thx.39.12.956.
6. Hackman RC, Madtes DK, Petersen FB, Clark JG. Pulmonary venoocclusive disease following bone marrow transplantation. *Transplantation*. 1989;47(6):989-92. doi: 10.1097/00007890-198906000-00014.
7. Salzman D, Adkins DR, Craig F, Freytes C, LeMaistre CF. Malignancy-associated pulmonary veno-occlusive disease: report of a case following autologous bone marrow transplantation and review. *Bone Marrow Transplant*. 1996;18(4):755-60.
8. Kawashima N, Ikoma M, Sekiya Y, Narita A, Yoshida N, Matsumoto K, et al. Successful treatment of pulmonary hypertension with beraprost and sildenafil after cord blood transplantation for infantile leukemia. *Int J Hematol*. 2013;97(1):147-50. doi: 10.1007/s12185-012-1246-z.
9. Kawashima N, Fukasawa Y, Nishikawa E, Ohta-Ogo K, Ishibashi-Ueda H, Hamada M, et al. Echocardiography Monitoring of Pulmonary Hypertension after Pediatric Hematopoietic Stem Cell Transplantation: Pediatric Pulmonary Arterial Hypertension and Pulmonary Veno-Occlusive Disease after Hematopoietic Stem Cell Transplantation. *Transplant Cell Ther*. 2021;27(9):786.e1-e8.
10. Bunte MC, Patnaik MM, Pritzker MR, Burns LJ. Pulmonary veno-occlusive disease following hematopoietic stem cell transplantation: a rare model of endothelial dysfunction. *Bone Marrow Transplant*. 2008;41(8):677-86. doi: 10.1038/sj.bmt.1705990.
11. Isshiki K, Shima H, Yamazaki F, Takenouchi T, Shimada H. A Case of Pulmonary Veno-occlusive Disease Following Hepatic Veno-occlusive Disease After Autologous Hematopoietic Stem Cell Transplantation for Neuroblastoma. *J Pediatr Hematol Oncol*. 2020;42(7):e677-e9. doi: 10.1097/mpb.0000000000001566.
12. Seguchi M, Hirabayashi N, Fujii Y, Azuno Y, Fujita N, Takeda K, et al. Pulmonary hypertension associated with pulmonary occlusive vasculopathy after allogeneic bone marrow transplantation. *Transplantation*. 2000;69(1):177-9. doi: 10.1097/0000000000001150-00030.
13. Zinter MS, Melton A, Sabnis AJ, Dvorak CC, Elicker BM, Nawaytou HM, et al. Pulmonary veno-occlusive disease in a pediatric hematopoietic stem cell transplant patient: a cautionary tale. *Leuk Lymphoma*. 2018;59(6):1494-7. doi: 10.1080/10428194.2017.1382697.
14. Katrien M, Dieter S, Anke D, Amelie D, De Pauw M, Eric D. Case report: pulmonary veno-occlusive disease: a rare but fatal cause of pulmonary hypertension in a patient following allogeneic stem cell transplantation. *Acta Clin Belg*. 2021;1-6. doi: 10.1080/17843286.2021.1945352.
15. Mukai M, Kondo M, Bohgaki T, Notoya A, Kohno M. Pulmonary veno-occlusive disease following allogeneic peripheral blood stem cell transplantation for chronic myeloid leukaemia. *Br J Haematol*. 2003;123(1):1. doi: 10.1046/j.1365-2141.2003.04423.x.
16. Williams LM, Fussell S, Veith RW, Nelson S, Mason CM. Pulmonary veno-occlusive disease in an adult following bone marrow transplantation. Case report and review of the literature. *Chest*. 1996;109(5):1388-91. doi: 10.1378/chest.109.5.1388.
17. Kuga T, Kohda K, Hirayama Y, Matsumoto S, Nakazawa O, Ando M, et al. Pulmonary veno-occlusive disease accompanied by microangiopathic hemolytic anemia 1 year after a second bone marrow transplantation for acute lymphoblastic leukemia. *Int J Hematol*. 1996;64(2):143-50. doi: 10.1016/0925-5710(96)00467-7.