

Table SI. Clinical features for post-transplant patients admitted to the ICU.

Characteristics	All patients, n=108	Survivors , n=50	Non-survi vors, n=58	P-val ue
Median age (range), years	41(18-69)	38.5 (29-56)	42 (31.5-53)	0.87 0
Sex, female, n (%)	73 (67.6)	33 (66.0)	40 (69.0)	0.74 3
Hematologic malignancies, n (%)				0.69 7
Acute leukemia	77 (71.3)	39 (78.0)	38 (65.5)	
Chronic leukemia	8 (7.4)	3 (6.0)	5 (8.6)	
Lymphoma	9 (8.3)	4 (8.0)	5 (8.6)	
Myelodysplastic syndromes	11 (10.2)	3 (6.0)	8 (13.8)	
Other	3 (2.8)	1 (2.0)	2 (3.5)	
The type of hematopoietic stem cell transplantation, n (%)				0.51 4
Identical sibling donor	25 (23.1)	13 (26.0)	12 (20.7)	
Haploidentical donor	83 (76.9)	37 (74.0)	46 (79.3)	
Leading cause for ICU admission, n (%) ^a				
Respiratory failure	52 (48.1)	29 (58.0)	23 (39.7)	0.05 7
Liver failure	23 (21.3)	10 (20.0)	13 (22.4)	0.76 0
Acute kidney injury	5 (4.6)	1 (2.0)	4 (6.9)	0.37 0
Disorders of consciousness	6 (5.6)	2 (4.0)	4 (6.9)	0.68 4

Alveolar hemorrhage	5 (4.6)	2 (4.0)	3 (5.2)	1.00 0
Septic shock	9 (8.3)	1 (2.0)	8 (13.8)	0.03 6
Cerebrovascular disease	2 (1.9)	1 (2.0)	1 (1.7)	1.00 0
Heart failure	1 (0.9)	0 (0)	1 (0.9)	1.00 0
Other	5 (4.6)	4 (8.0)	1 (1.7)	0.18 0

HSCT, hematopoietic stem cell transplantation; ICU, intensive care unit.

^aFor patients with several diseases at the time of ICU admission, only the most severe condition was considered as the cause for admission.

Table SII. Characteristics of patients receiving HSCT.

Characteristics	Survivors (n=50)	Non-Survivors (n=58)	P-value
WBC counts at diagnosis (range), $\times 10^9/l$	8.4 (1.0-364.7)	7.9 (0.8-399.0)	0.230
Bone marrow blasts at diagnosis (range), %	54.5 (0-97.0)	41.0 (0-98.0)	0.290
Disease risk index before HSCT, n (%)			0.405
Low-risk	14 (28.0)	12 (20.7)	
Intermediate-risk	22 (44.0)	33 (56.9)	
High-risk	14 (28.0)	13 (22.4)	
The type of hematopoietic stem cell transplantation, n (%)			0.514
Identical sibling donor	13 (26.0)	12(20.7)	
Haploidentical donor	37 (74.0)	46(79.3)	
Donor-recipient sex matching, n (%)			0.970
Male-female	8 (16.0)	11(19.0)	
Male-male	18 (36.0)	20(34.5)	
Female-female	8 (16.0)	8 (13.8)	
Female-male	16 (32.0)	19 (32.8)	
Relationship of donor, n (%)			0.735
Parental	12 (24.0)	19 (32.8)	
Sibling	24 (48.0)	25 (43.1)	
Children	13 (26.0)	12 (20.7)	
Other	1 (2.0)	2 (3.4)	
Donor and recipient blood groups, n (%)			0.768
Same	29 (58.0)	32 (55.2)	

Different	21 (42.0)	26 (44.8)	
Homozygous loci, n (%)			0.807
3/6	32 (64.0)	40 (69.0)	
4/6	5 (10.0)	6 (10.3)	
6/6	13 (26.0)	12 (20.7)	
GVHD after HSCT, n (%)			
aGVHD	21 (36.2)	11 (22.0)	0.107
cGVHD	6 (10.3)	4 (8.0)	0.931
Chimeric state after HSCT, n (%)			0.916
Partial chimerism	1 (2.0)	1 (1.7)	
Complete chimerism	49 (98.0)	57 (98.3)	

HSCT, hematopoietic stem cell transplantation; WBC, white blood cell.

Table SIII. Characteristics of clinical tests on the day of ICU admission and treatments in ICU.

Characteristics	Survivors, n=50	Non-survivors, n=58	P-value
Laboratory test on day of ICU admission			
Median lactate (range), mmol/l	1.05 (0.70-1.80)	1.60 (0.90-2.82)	0.004
Median white blood cell count (range), 10 ⁹ /l	4.12 (2.27-7.18)	2.91 (1.10-6.48)	0.100
Median neutrophil count (range), 10 ⁹ /l	2.68 (1.23-5.77)	1.83 (0.37-4.77)	0.158
Neutropenia, n (%)	5 (10.0)	15 (25.9)	0.034
Median lymphocyte count (range), 10 ⁹ /l	0.56 (0.32-1.22)	0.30 (0.13-0.86)	0.017
Median hemoglobin (range), g/l	83.00 (71.75-100.50)	71.00 (57.00-84.00)	<0.001
Median platelet count (range), 10 ⁹ /l	38.50 (19.75-83.75)	25.00 (14.75-50.75)	0.008
Median creatinine (range), µmol/l	70.00 (59.00-93.50)	75.50 (58.75-145.25)	0.153
Median bilirubin (range), µmol/l	15.55 (7.85-45.83)	52.95 (11.70-153.48)	0.022
Median serum potassium (range), mmol/l	3.83 (3.32-4.43)	3.89(3.32-4.43)	0.586
Median brain natriuretic peptide (range), pg/ml	138.50 (4900-366.75)	268.00 (125.50-721.25)	0.006
Median fibrin degradation product (range), mg/l	4.35 (2.30-10.82)	8.10 (5.10-24.33)	<0.001
Median D-dimer (range), µg/l	509.50 (218.75-1134.25)	841.50 (445.00-2966.25)	0.002
HCT-CI, median (range)	249.00 (116.25-411.75)	424.50 (369.75-500.00)	< 0.001
Median APACHE II score at admission (range)	18.00 (15.00-22.00)	23.50 (19.00-29.00)	< 0.001
Treatment at ICU admission, n (%)			

Use of vasoactive drugs	5 (10.0)	24 (41.4)	<0.001
Invasive mechanical ventilation	1 (2.0)	22 (37.9)	<0.001
Non-invasive mechanical ventilation	29 (58.0)	35 (60.3)	0.805
Continuous renal replacement therapy	2 (4.0)	7 (12.1)	0.172
Plasma exchange	10 (20.0)	18 (31.0)	0.192
Median length of ICU stay (range), days	10.0 (1.0-39.0)	6.5 (0-39.0)	0.052

HCT-CI, hematopoietic cell transplantation comorbidity Index; APACHE II, acute physiology and chronic health evaluation II; ICU, intensive care unit.

Table SIV. Univariable analyses of prognostic factors for ICU mortality.

Variable	HR	95% CI	P-value
Sex			
Male	1.00		0.568
Female	0.850	0.49-1.49	
Age			
≤median	1.00		0.965
>median	0.99	0.58-1.67	
Hematologic malignancies			
Acute leukemia	1.00		
Chronic leukemia	1.99	0.78-5.14	0.152
Lymphoma	2.09	0.97-4.51	0.061
Myelodysplastic syndromes	2.00	0.96-4.13	0.061
Other	0.59	0.08-4.42	0.610
Hematopoietic stem cell transplantation			
Identical sibling donor	1.00		
Haploidentical donor	0.99	0.52-1.88	0.980
Reason for ICU admission			
Respiratory failure			
No	1.00		0.001
Yes	0.41	0.24-0.71	
Liver failure			
No	1.00		0.200
Yes	1.51	0.80-2.83	

Acute kidney injury			
No	1.00		0.232
Yes	1.87	0.67-5.20	
Unconsciousness			
No	1.00		0.096
Yes	2.41	0.86-6.82	
Alveolar hemorrhage			
No	1.00		0.536
Yes	1.45	0.45-4.68	
Cerebrovascular disease			
No	1.00		0.890
Yes	1.15	0.16-8.40	
Heart failure			
No	1.00		0.906
Yes	0.89	0.12-6.49	
Septic shock			
No	1.00		0.067
Yes	2.30	1.06-4.95	
HCT-CI			
≤median	1.00		0.039
>median	1.73	1.03-2.91	
APACHE II score at admission			
≤median	1.00		0.001
>median	2.58	1.50-4.42	
Laboratory test on day of ICU admission			
lactate (mmol/l)			

≤median	1.00		0.004
>median	2.14	1.27-3.61	
White blood cell count (10 ⁹ /l)			
≤median	1.00		0.559
>median	0.86	0.51-1.44	
Neutrophil count (10 ⁹ /l)			
≤median	1.00		0.528
>median	0.85	0.50-1.42	
Neutropenia (10 ⁹ /l)			
≤0.5	1.00		0.006
>0.5	2.32	1.27-4.24	
Lymphocyte count (10 ⁹ /l)			
≤median	1.00		0.022
>median	0.53	0.31-0.91	
Hemoglobin (g/l)			
≤median	1.00		<0.001
>median	0.31	0.18-0.55	
Platelet count (10 ⁹ /l)			
≤median	1.00		<0.001
>median	0.33	0.18-0.59	
Creatinine (μmol/l)			
≤median	1.00		0.205
>median	1.40	0.83-2.35	
Bilirubin (μmol/l)			
≤ median	1.00		<0.001
>median	3.10	1.74-5.51	

Serum potassium (mmol/l)			
≤ median	1.00		0.938
>median	1.02	0.60-1.72	
Brain natriuretic peptide (pg/ml)			
≤ median	1.00		0.002
>median	2.37	1.39-4.05	
Fibrin degradation product (mg/l)			
≤ median	1.00		0.002
>median	2.38	1.39-4.07	
D-dimer (μg/l)			
≤ median	1.00		0.036
>median	1.76	1.04-2.97	
Treatment at admission			
Use of vasoactive drugs			
No	1.00		0.003
Yes	2.21	1.30-3.74	
Non-invasive mechanical ventilation			
No	1.00		0.070
Yes	0.60	0.35-1.04	
Invasive mechanical ventilation			
No	1.00		0.005
Yes	2.15	1.26-3.68	
Continuous renal			

replacement therapy			
No	1.00		0.250
Yes	1.60	0.72-3.54	
Plasma exchange			
No	1.00		0.138
Yes	1.54	0.87-2.71	

HCT-CI, hematopoietic cell transplantation comorbidity Index; APACHE II, acute physiology and chronic health evaluation II; ICU, intensive care unit.

Table SV. Univariable analyses of leading cause for respiratory failure mortality.

Variable	HR	95% CI	P-value
Sex			
Male	1.00		0.678
Female	1.19	0.52-2.76	
Age			
≤median	1.00		0.642
>median	0.82	0.35-1.92	
Hematologic malignancies			
Acute leukemia	1.00		
Chronic leukemia	2.88	0.82-10.12	1.000
Lymphoma	0.61	0.14-2.72	0.513
Myelodysplastic syndromes	1.86	0.54-6.47	0.328
Other	1.051	0.13-8.41	0.963
Hematopoietic stem cell transplantation			
Identical sibling donor	1.00		
Haploidentical donor	1.02	0.62-1.67	0.938
Reason for ICU admission			
Respiratory failure			
No	1.00		0.060
Yes	2.60	0.96-7.05	
Liver failure			
No	1.00		0.142
Yes	0.22	0.03-1.65	
Acute kidney injury			
No	1.00		0.915
Yes	1.12	0.15-8.35	
Unconsciousness			
No	1.00		0.565

Yes	0.05	0.0-1653.0	
Alveolar hemorrhage			
No	1.00		0.04
Yes	3.64	1.06-12.48	
Cerebrovascular disease			
No	1.00		0.685
Yes	0.048	0.00-111433.77	
Heart failure			
No	1.00		0.644
Yes	0.05	0.00-19607.32	
Septic shock			
No	1.00		0.369
Yes	0.05	0.00-41.64	
HCT-CI			
≤median	1.00		0.198
>median	1.77	0.77-3.65	
APACHE II score at admission			
≤median	1.00		0.016
>median	2.69	1.20-6.02	
Laboratory test on day of ICU admission			
Lactate (mmol/l)			
≤median	1.00		0.403
>median	1.39	0.64-3.02	
White blood cell count (10 ⁹ /l)			
≤median	1.00		0.470
> median	1.33	0.61-2.91	
Neutrophil count (10 ⁹ /l)			
≤median	1.00		0.806
>median	1.102	0.51-2.39	

Neutropenia ($10^9/l$)			
≤0.5	1.00		0.276
>0.5	1.75	0.64-4.79	
Lymphocyte count ($10^9/l$)			
≤median	1.00		0.554
>median	.28	0.57-2.88	
Hemoglobin (g/l)			
≤median	1.00		<0.004
>median	0.29	0.13-0.67	
Platelet count ($10^9/l$)			
≤median	1.00		0.027
>median	0.36	0.15-0.89	
Creatinine ($\mu\text{mol/l}$)			
≤median	1.00		0.680
>median	1.18	0.53-2.62	
Bilirubin ($\mu\text{mol/l}$)			
≤ median	1.00		0.915
>median	0.96	0.42-2.16	
Serum potassium (mmol/l)			
≤median	1.00		0.685
>median	0.85	0.38-1.88	
Brain natriuretic peptide (pg/ml)			
≤median	1.00		0.133
>median	1.82	0.83-3.98	
Fibrin degradation product (mg/l)			
≤median	1.00		0.043
>median	2.31	1.03-5.19	
D-dimer ($\mu\text{g/l}$)			

≤median	1.00		0.637
>median	1.22	0.54-2.72	
Treatment at admission			
Use of vasoactive drugs			
No	1.00		0.505
Yes	0.72	0.27-1.92	
Non-invasive mechanical ventilation			
No	1.00		0.082
Yes	2.26	0.90-5.68	
Invasive mechanical ventilation			
No	1.00		0.533
Yes	1.47	0.44-5.00	
Continuous renal replacement therapy			
No	1.00		0.49
Yes	0.49	0.07-3.67	
Plasma exchange			
No	1.00		0.235
Yes	0.48	0.14-1.62	

HCT-CI, hematopoietic cell transplantation comorbidity Index; APACHE II, acute physiology and chronic health evaluation II; ICU, intensive care unit.