

Table S1 Correlation analysis of TVD and various clinical indicators at different time intervals

Indicators	0 hour (n=24)		6 hours (n=24)		16 hours (n=19)		24 hours (n=16)	
	Coefficient	P value	Coefficient	P value	Coefficient	P value	Coefficient	P value
Perfusion pressure (mmHg)	0.1515	0.4798	0.0055	0.9795	0.2066	0.3961	0.1803	0.5041
Systolic pressure (mmHg)	0.1423	0.5072	0.1086	0.6135	0.1284	0.6003	0.1456	0.5905
MAP (mmHg)	0.0355	0.8694	-0.0165	0.9392	0.1624	0.5065	0.2268	0.3983
Central body temperature (rectal temperature) (°C)	-0.1911	0.3711	0.1761	0.4106	0.3430	0.1505	-0.1403	0.6043
CI (L/min/m ²)	-0.1527*	0.4761	-0.0078	0.9712	0.0688	0.7794	-0.3862	0.1395
Systemic vascular resistance index (dyn-sec/cm ⁵ /m ²)	0.2618	0.2165	-0.0907	0.6734	-0.1261	0.6070	0.1307	0.6295
Arterial lactic acid (mmol/L)	0.1933*	0.3656	0.1280	0.5510	-0.4428	0.0576	0.1176	0.6643
Mixed venous oxygen saturation (%)	0.1184*	0.5815	0.2865	0.1747	0.0603	0.8063	-0.0873	0.7478
DO ₂ l (mL/min·m ²)	-0.0957*	0.6566	0.0451	0.8342	-0.0239	0.9226	-0.5059	0.0456
PCO ₂ gap (mmHg)	0.0434	0.8404	0.1404	0.5128	-0.4018	0.0882	0.1380	0.6102

*, Spearman correlation analysis was used for non-normally distributed data. TVD, total vascular density; MAP, mean arterial pressure; CI, cardiac index; DO₂l, oxygen delivery index; PCO₂gap, carbon dioxide partial pressure difference.

Table S2 Correlation analysis of PSVD and various clinical indicators at different time intervals

Indicators	0 hour (n=24)		6 hours (n=24)		16 hours (n=19)		24 hours (n=16)	
	Coefficient	P value	Coefficient	P value	Coefficient	P value	Coefficient	P value
Perfusion pressure (mmHg)	0.2506	0.2375	-0.0138	0.9491	0.0810	0.7418	0.1034	0.7033
Systolic pressure (mmHg)	0.1923	0.3680	0.0792	0.7131	0.0293	0.9052	0.1041	0.7014
MAP (mmHg)	0.1555	0.4682	0.0061	0.9776	0.0494	0.8409	0.1968	0.4651
Central body temperature (rectal temperature) (°C)	-0.0861	0.6890	0.1783	0.4046	0.3552	0.1356	-0.2219	0.4088
CI (L/min/m ²)	-0.1033*	0.6310	0.0115	0.9573	0.1148	0.6399	-0.3223	0.2234
Systemic vascular resistance index (dyn-sec/cm ⁵ /m ²)	0.3696	0.0755	-0.1275	0.5526	-0.2240	0.3565	0.0867	0.7494
Arterial lactic acid (mmol/L)	0.0474*	0.8258	-0.9786	0.0058	-0.4087	0.0823	0.0887	0.7440
Mixed venous oxygen saturation (%)	0.1437*	0.5029	0.1918	0.3694	0.0173	0.9939	-0.1059	0.6962
DO ₂ l (mL/min·m ²)	-0.0574*	0.7900	0.0525	0.8074	0.0004	0.9986	-0.5499	0.0273
PCO ₂ gap (mmHg)	0.2636	0.2133	0.0715	0.7397	-0.3521	0.1393	0.2466	0.3572

*, Spearman correlation analysis was used for non-normally distributed data. PSVD, perfused small vessel density; MAP, mean arterial pressure; CI, cardiac index; DO₂l, oxygen delivery index; PCO₂gap, carbon dioxide partial pressure difference.

Table S3 Correlation analysis of PPV and various clinical indicators at different time intervals

Indicators	0 hour (n=24)		6 hours (n=24)		16 hours (n=19)		24 hours (n=16)	
	Coefficient	P value	Coefficient	P value	Coefficient	P value	Coefficient	P value
Perfusion pressure (mmHg)	0.1631	0.4464	-0.0393*	0.8555	-0.3735	0.1152	0.0192*	0.9438
Systolic pressure (mmHg)	0.0024	0.9912	0.0564*	0.7935	-0.3333	0.1632	0.1502*	0.5787
MAP (mmHg)	0.2012	0.3459	0.1019*	0.6357	-0.2981	0.0914	0.1669*	0.5367
Central body temperature (rectal temperature) (°C)	0.2335	0.2722	0.2229*	0.2951	0.2470	0.3081	-0.1438*	0.5952
CI (L/min/m ²)	-0.1549*	0.4698	0.0861*	0.6892	0.1941	0.4259	-0.0531*	0.8450
Systemic vascular resistance index (dyn-sec/cm ⁵ /m ²)	0.2273	0.2855	-0.0935*	0.6639	-0.4254	0.0694	-0.0412*	0.8797
Arterial lactic acid (mmol/L)	-0.3687*	0.0763	-0.2600*	0.2199	-0.0647	0.7925	0.2096*	0.4359
Mixed venous oxygen saturation (%)	-0.1393*	0.5161	-0.0427*	0.8430	-0.0778	0.7517	0.0265*	0.9224
DO ₂ l (mL/min·m ²)	-0.2122*	0.3196	0.0905*	0.6742	0.0898	0.7174	-0.3471*	0.1878
PCO ₂ gap (mmHg)	0.4370	0.0327	-0.0988*	0.6462	0.0499	0.8391	-0.0626*	0.8179

*, Spearman correlation analysis was used for non-normally distributed data. PPV, proportion of perfused small vessels; MAP, mean arterial pressure; CI, cardiac index; DO₂l, oxygen delivery index; PCO₂gap, carbon dioxide partial pressure difference.

Table S4 Correlation analysis of MFI and various clinical indicators at different time intervals

Indicators	0 hour (n=24)		6 hours (n=24)		16 hours (n=19)		24 hours (n=16)	
	Coefficient	P value	Coefficient	P value	Coefficient	P value	Coefficient	P value
Perfusion pressure (mmHg)	0.0732	0.7340	0.1337*	0.5335	0.0153	0.9505	0.0707	0.7948
Systolic pressure (mmHg)	-0.0357	0.8686	0.0935*	0.6639	-0.2135	0.3802	0.0004	0.9988
MAP (mmHg)	0.1159	0.5898	0.1370*	0.5233	-0.1721	0.4810	0.2082	0.4391
Central body temperature (rectal temperature) (°C)	0.0913	0.6713	0.1936*	0.3646	0.4498	0.0533	-0.2966	0.2646
CI (L/min/m ²)	-0.1919*	0.3689	0.0871*	0.6856	0.1738	0.4767	-0.0750	0.7826
Systemic vascular resistance index (dyn-sec/cm ⁵ /m ²)	0.2227	0.2955	-0.0362*	0.8667	-0.2999	0.2122	-0.0312	0.9086
Arterial lactic acid (mmol/L)	-0.1983*	0.3530	-0.0221*	0.9185	-0.0003	0.9992	0.0955	0.7249
Mixed venous oxygen saturation (%)	-0.0642*	0.7658	-0.1492*	0.4867	-0.0901	0.7138	-0.1649	0.5417
DO ₂ l (mL/min·m ²)	-0.2101*	0.3245	0.0666*	0.7571	0.1632	0.5045	-0.4021	0.1226
PCO ₂ gap (mmHg)	0.6496	0.0006	0.0689*	0.7491	-0.2519	0.2982	0.1483	0.5836

*, Spearman correlation analysis was used for non-normally distributed data. MFI, microvascular flow index; MAP, mean arterial pressure; CI, cardiac index; DO₂l, oxygen delivery index; PCO₂gap, carbon dioxide partial pressure difference.

Table S5 Correlation analysis of HI and various clinical indicators at different time intervals

Indicators	0 hour (n=24)		6 hours (n=24)		16 hours (n=19)		24 hours (n=16)	
	Coefficient	P value	Coefficient	P value	Coefficient	P value	Coefficient	P value
Perfusion pressure (mmHg)	-0.0252	0.9069	-0.2115*	0.3210	0.0847*	0.7304	-0.1190*	0.6608
Systolic pressure (mmHg)	0.1796	0.4011	-0.1319*	0.5389	0.0234*	0.9244	-0.0378*	0.8894
MAP (mmHg)	-0.0652	0.7623	-0.2011*	0.3461	0.1167*	0.6343	-0.2842*	0.2860
Central body temperature (rectal temperature) (°C)	-0.1155	0.5911	-0.1306*	0.5431	-0.3780*	0.1105	0.3630*	0.1671
CI (L/min/m ²)	0.1609*	0.4525	-0.0351*	0.8707	-0.0750*	0.7603	0.1234*	0.6488
Systemic vascular resistance index (dyn-sec/cm ⁵ /m ²)	-0.0986	0.6466	-0.0271*	0.8999	0.0256*	0.9173	-0.0919*	0.7351
Arterial lactic acid (mmol/L)	0.2996*	0.1492	0.0790*	0.7136	0.1075*	0.6613	-0.0297*	0.9129
Mixed venous oxygen saturation (%)	0.1492*	0.4865	0.2051*	0.3364	0.1559*	0.5239	0.0994*	0.7142
DO ₂ I (mL/min·m ²)	0.1716*	0.4226	-0.0368*	0.8646	-0.0141*	0.9543	0.4356*	0.0917
PCO ₂ gap (mmHg)	-0.5350	0.0071	0.0648*	0.7636	0.2988*	0.2139	0.0353*	0.8968

*, Spearman correlation analysis was used for non-normally distributed data. HI, flow heterogeneity index; MAP, mean arterial pressure; CI, cardiac index; DO₂I, oxygen delivery index; PCO₂gap, carbon dioxide partial pressure difference.