

Diabetes–TyG interaction and mortality in critical cerebrovascular disease: a retrospective cohort study

Hui Wang^{1*†}, Xiaojun Ding^{2†}, Xuelei Cao¹, Jinglei Lv³

Department and institution

1Department of Emergency Medicine, The Affiliated Hospital of Qingdao University, Shandong, China

2Department of Neurology, Qilu Hospital (Qingdao) of Shandong University, Shandong, China

3Department of Neurology, The Affiliated Hospital of Qingdao University, Shandong, China

[†]Hui Wang and Xiaojun Ding shared the first authorship.

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*Corresponding Author

Name: Hui Wang

Address: Qingdao, Shandong, China

E-mail address: qdfywanghui@qdu.edu.cn

Table S1 ICD codes for cerebrovascular disease

Diagnosis	ICD Code
Subarachnoid hemorrhage	430
Intracerebral hemorrhage	431
Other and unspecified intracranial hemorrhage	432
Occlusion and stenosis of precerebral arteries	433
Occlusion of cerebral arteries	434
Transient cerebral ischemia	435
Acute, but ill-defined, cerebrovascular disease	436
Other and ill-defined cerebrovascular disease	437
Late effects of cerebrovascular disease	438
Central retinal artery occlusion	362.34
Subarachnoid hemorrhage	I60
Intracerebral hemorrhage	I61
Other nontraumatic intracranial hemorrhage	I62
Cerebral infarction	I63
Stroke, not specified as hemorrhage or infarction	I64
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	I65
Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	I66
Other cerebrovascular diseases	I67
Cerebrovascular disorders in diseases classified elsewhere	I68
Sequelae of cerebrovascular disease	I69
Transient cerebral ischemic attacks and related syndromes	G45
Vascular syndromes of brain in cerebrovascular diseases	G46
Retinal arterial occlusion	H34.0

Table S2 Comparison of basic characteristics between excluded and included populations

Variable	Total (n=9417)	Excluded (n=6833)	Included (n=2584)	P-value
Sex				
Male	4874 (51.8)	3568 (52.2)	1306 (50.5)	0.147
Female	4543 (48.2)	3265 (47.8)	1278 (49.5)	
Age, years	68.7 ± 15.2	68.1 ± 15.1	70.2 ± 15.1	< 0.001
Race				
White	5760 (61.2)	4293 (62.8)	1467 (56.8)	< 0.001
Black	898 (9.5)	665 (9.7)	233 (9.0)	
Asian	294 (3.1)	222 (3.2)	72 (2.8)	
Others	2465 (26.2)	1653 (24.2)	812 (31.4)	
Weight, kg	79.3 ± 24.2	79.1 ± 24.9	79.7 ± 22.2	0.347
Vital signs				
Heart rate, bpm	100.0 ± 19.5	100.4 ± 19.6	98.9 ± 19.2	0.001
MBP, mmHg	63.3 ± 14.9	61.5 ± 14.4	68.2 ± 15.1	< 0.001
Respiratory rate, breaths/min	27.2 ± 6.1	27.1 ± 6.1	27.4 ± 6.0	0.022
Temperature, °C	37.4 ± 0.7	37.4 ± 0.7	37.4 ± 0.6	0.469
SpO ₂ , %	92.3 ± 5.7	92.3 ± 5.9	92.3 ± 5.3	0.747
Laboratory parameters				
Hemoglobin, g/dL	11.1 ± 2.3	10.8 ± 2.3	11.9 ± 2.1	< 0.001
Platelets, ×10 ⁹ /L	200.4 ± 88.2	196.9 ± 91.8	209.7 ± 77.3	< 0.001
WBC, ×10 ⁹ /L	11.8 (8.8, 15.8)	12.3 (9.1, 16.4)	10.6 (8.2, 13.8)	< 0.001
Anion gap, mmol/L	15.5 ± 4.2	15.6 ± 4.3	15.4 ± 4.0	0.064
Bicarbonate, mmol/L	24.0 ± 3.4	24.1 ± 3.5	24.0 ± 3.2	0.670
BUN, mg/dL	18.0 (13.0, 27.0)	18.0 (13.0, 27.0)	18.0 (13.0, 25.0)	0.016
Calcium, mg/dL	8.8 ± 0.7	8.7 ± 0.7	8.9 ± 0.6	< 0.001
Chloride, mmol/L	106.2 ± 5.9	106.5 ± 6.2	105.3 ± 5.2	< 0.001
Creatinine, mg/dL	1.0 (0.8, 1.3)	1.0 (0.8, 1.3)	1.0 (0.8, 1.2)	0.290
Sodium, mmol/L	140.7 ± 5.1	140.7 ± 5.2	140.8 ± 4.5	0.350
Potassium, mmol/L	4.4 ± 0.8	4.4 ± 0.8	4.3 ± 0.8	< 0.001
INR	1.4 ± 0.9	1.4 ± 1.0	1.3 ± 0.4	< 0.001
ALT, U/L	21.0 (15.0, 36.0)	23.0 (15.0, 43.0)	19.0 (14.0, 29.0)	< 0.001
Comorbidities, n (%)				
Myocardial infarction	1448 (15.4)	1096 (16.0)	352 (13.6)	0.004
Congestive heart failure	1965 (20.9)	1478 (21.6)	487 (18.8)	0.003
Peripheral vascular disease	1413 (15.0)	1196 (17.5)	217 (8.4)	< 0.001
Chronic pulmonary disease	1775 (18.8)	1404 (20.5)	371 (14.4)	< 0.001
Diabetes	2747 (29.2)	1981 (29.0)	766 (29.6)	0.534
Hypertension	7045 (74.8)	4986 (73.0)	2059 (79.7)	< 0.001
Renal disease	1601 (17.0)	1218 (17.8)	383 (14.8)	< 0.001
Malignant cancer	766 (8.1)	603 (8.8)	163 (6.3)	< 0.001
Severe liver disease	170 (1.8)	144 (2.1)	26 (1.0)	< 0.001
Sepsis	3873 (41.1)	3034 (44.4)	839 (32.5)	< 0.001
Charlson comorbidity index	6.6 ± 2.8	6.5 ± 2.8	6.9 ± 2.6	< 0.001

Severity of illness				
APS III score	45.0 ± 23.2	46.1 ± 23.9	42.1 ± 21.0	< 0.001
SAPS II score	34.7 ± 13.1	35.6 ± 13.5	32.5 ± 11.8	< 0.001
Interventions				
IMV	3612 (38.4)	2818 (41.2)	794 (30.7)	< 0.001
RRT	372 (4.0)	297 (4.3)	75 (2.9)	0.001
Vasoactive drug	2372 (25.2)	2026 (29.7)	346 (13.4)	< 0.001
Outcomes				
30-day mortality	1753 (18.6)	1269 (18.6)	484 (18.7)	0.860
90-day mortality	2207 (23.4)	1607 (23.5)	600 (23.2)	0.760
365-day mortality	2842 (30.2)	2094 (30.6)	748 (28.9)	0.109

Notes: data presented are mean ± SD, or N (%).

Abbreviations: ALT, alanine aminotransferase; APS III, Acute Physiology Score III; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; MBP, mean blood pressure; RRT, renal replacement therapy; SAPS II, Simplified Acute Physiology Score II; SD, standard deviation; SpO₂, peripheral oxygen saturation; TyG, triglyceride-glucose; WBC, white blood cell.

Table S3 ICD codes for diabetes

Diagnosis	ICD Code
Diabetes without Complications	
Type II diabetes mellitus without mention of complication	2500
Type I diabetes mellitus without mention of complication	2501
Diabetes with ketoacidosis	2502
Diabetes with hyperosmolarity	2503
Diabetes with other specified manifestations	2508
Diabetes without mention of complication	2509
Type 1 diabetes mellitus without complications	E100
Type 1 diabetes mellitus with coma	E101
Type 1 diabetes mellitus with diabetic neuropathy	E104
Type 1 diabetes mellitus with other specified complications	E108
Type 1 diabetes mellitus without complications	E109
Type 2 diabetes mellitus without complications	E110
Type 2 diabetes mellitus with coma	E111
Type 2 diabetes mellitus with diabetic neuropathy	E114
Type 2 diabetes mellitus with other specified complications	E118
Type 2 diabetes mellitus without complications	E119
Malnutrition-related diabetes mellitus without complications	E120
Malnutrition-related diabetes mellitus with coma	E121
Malnutrition-related diabetes mellitus with neuropathy	E124
Malnutrition-related diabetes mellitus with other specified complications	E128
Malnutrition-related diabetes mellitus without complications	E129
Other specified diabetes mellitus without complications	E130
Other specified diabetes mellitus with coma	E131
Other specified diabetes mellitus with neuropathy	E134
Other specified diabetes mellitus with other specified complications	E138
Other specified diabetes mellitus without complications	E139
Unspecified diabetes mellitus without complications	E140
Unspecified diabetes mellitus with coma	E141
Unspecified diabetes mellitus with neuropathy	E144
Unspecified diabetes mellitus with other specified complications	E148
Unspecified diabetes mellitus without complications	E149
Diabetes with Complications	
Diabetes with renal manifestations	2504
Diabetes with ophthalmic manifestations	2505
Diabetes with neurological manifestations	2506
Diabetes with peripheral circulatory disorders	2507
Type 1 diabetes mellitus with kidney complications	E102
Type 1 diabetes mellitus with ophthalmic complications	E103
Type 1 diabetes mellitus with peripheral circulatory complications	E105
Type 1 diabetes mellitus with multiple complications	E107
Type 2 diabetes mellitus with kidney complications	E112

Type 2 diabetes mellitus with ophthalmic complications	E113
Type 2 diabetes mellitus with peripheral circulatory complications	E115
Type 2 diabetes mellitus with multiple complications	E117
Malnutrition-related diabetes mellitus with kidney complications	E122
Malnutrition-related diabetes mellitus with ophthalmic complications	E123
Malnutrition-related diabetes mellitus with peripheral circulatory complications	E125
Malnutrition-related diabetes mellitus with multiple complications	E127
Other specified diabetes mellitus with kidney complications	E132
Other specified diabetes mellitus with ophthalmic complications	E133
Other specified diabetes mellitus with peripheral circulatory complications	E135
Other specified diabetes mellitus with multiple complications	E137
Unspecified diabetes mellitus with kidney complications	E142
Unspecified diabetes mellitus with ophthalmic complications	E143
Unspecified diabetes mellitus with peripheral circulatory complications	E145
Unspecified diabetes mellitus with multiple complications	E147

Table S4 Missing data in covariates

Variable	Missing, %
ALT, U/L	16.68
Anion gap, mmol/L	0.04
Bicarbonate, mmol/L	0.04
Calcium, mg/dL	5.15
Heart rate, bpm	0.12
Hemoglobin, g/dL	0.15
INR	2.67
Platelets, $\times 10^9/L$	0.23
Potassium, mmol/L	0.04
Respiratory rate, breaths/min	0.50
SpO ₂ , %	0.12
Temperature, °C	0.54
WBC, $\times 10^9/L$	0.12
Weight, kg	1.28

Abbreviations: ALT, alanine aminotransferase; INR, international normalized ratio; SpO₂, peripheral oxygen saturation; WBC, white blood cell.

Table S5 The variance inflation factor (VIF) of variables

Variable	VIF
Sex	1.433
Age	2.147
Race	1.428
Weight	1.452
Heart rate, bpm	1.419
MBP, mmHg	1.386
Respiratory rate, breaths/min	1.484
Temperature, °C	1.390
SpO ₂ , %	1.243
Hemoglobin, g/dL	1.589
Platelets, ×10 ⁹ /L	1.146
WBC, ×10 ⁹ /L	1.315
Anion gap, mmol/L	1.671
Bicarbonate, mmol/L	2.382
BUN, mg/dL	1.415
Calcium, mg/dL	3.161
Chloride, mmol/L	2.930
Creatinine, mg/dL	2.937
Sodium, mmol/L	1.223
Potassium, mmol/L	1.379
INR	1.140
Myocardial infarction	1.306
Congestive heart failure	1.325
Peripheral vascular disease	1.121
Chronic pulmonary disease	1.163
Diabetes	1.612
Hypertension	1.218
Renal disease	2.075
Malignant cancer	1.949
Severe liver disease	1.227
Charlson comorbidity index	3.468
APS III score	3.814
SAPS II score	3.219
Sepsis	1.651
IMV	1.910
RRT	2.162
Vasoactive drug	1.544

Abbreviations: ALT, alanine aminotransferase; APS III, Acute Physiology Score III; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; MBP, mean blood pressure; RRT, renal replacement therapy; SAPS II, Simplified Acute Physiology Score II; SpO₂, peripheral oxygen saturation; TyG, triglyceride-glucose; WBC, white blood cell.

Table S6 Association between covariates and 30-day, 90-day, and 365-day mortality

Variable	30-day mortality		90-day mortality		365-day mortality	
	HR (95%CI)	<i>P</i> -value	HR (95%CI)	<i>P</i> -value	HR (95%CI)	<i>P</i> -value
TyG index	1.42 (1.27, 1.59)	< 0.001	1.38 (1.25, 1.53)	< 0.001	1.30 (1.19, 1.43)	< 0.001
Female vs male	1.23 (1.03, 1.48)	0.021	1.28 (1.09, 1.50)	0.003	1.25 (1.08, 1.45)	0.002
Age	1.03 (1.03, 1.04)	< 0.001	1.03 (1.03, 1.04)	< 0.001	1.04 (1.03, 1.04)	< 0.001
Race						
Black vs White	0.71 (0.48, 1.05)	0.083	0.79 (0.57, 1.09)	0.154	0.82 (0.62, 1.09)	0.164
Asian vs White	1.07 (0.62, 1.88)	0.801	1.27 (0.80, 2.02)	0.311	1.08 (0.69, 1.67)	0.744
Others vs White	1.48 (1.23, 1.79)	< 0.001	1.45 (1.22, 1.72)	< 0.001	1.26 (1.08, 1.47)	0.003
Weight, kg	0.99 (0.98, 0.99)	< 0.001	0.99 (0.98, 0.99)	< 0.001	0.99 (0.98, 0.99)	< 0.001
Heart rate, bpm	1.02 (1.01, 1.02)	< 0.001	1.02 (1.01, 1.02)	< 0.001	1.02 (1.01, 1.02)	< 0.001
MBP, mmHg	0.98 (0.97, 0.98)	< 0.001	0.98 (0.97, 0.98)	< 0.001	0.98 (0.98, 0.98)	< 0.001
Respiratory rate, breaths/min	1.03 (1.02, 1.05)	< 0.001	1.03 (1.02, 1.05)	< 0.001	1.03 (1.02, 1.05)	< 0.001
Temperature, °C	1.82 (1.61, 2.05)	< 0.001	1.73 (1.54, 1.93)	< 0.001	1.63 (1.47, 1.81)	< 0.001
SpO ₂ , %	0.99 (0.97, 1.00)	0.041	0.99 (0.97, 1.00)	0.046	0.98 (0.97, 1.00)	0.006
Hemoglobin, g/dL	0.83 (0.80, 0.86)	< 0.001	0.83 (0.80, 0.86)	< 0.001	0.83 (0.81, 0.86)	< 0.001
Platelets, ×10 ⁹ /L	1.00 (1.00, 1.00)	0.002	1.00 (1.00, 1.00)	0.001	1.00 (1.00, 1.00)	0.001
WBC, ×10 ⁹ /L	1.02 (1.01, 1.02)	< 0.001	1.02 (1.01, 1.02)	< 0.001	1.02 (1.01, 1.02)	< 0.001
Anion gap, mmol/L	1.07 (1.06, 1.09)	< 0.001	1.07 (1.06, 1.08)	< 0.001	1.07 (1.05, 1.08)	< 0.001
Bicarbonate, mmol/L	0.94 (0.92, 0.97)	< 0.001	0.93 (0.91, 0.96)	< 0.001	0.95 (0.93, 0.98)	< 0.001
BUN, mg/dL	1.02 (1.02, 1.02)	< 0.001	1.02 (1.02, 1.02)	< 0.001	1.02 (1.02, 1.02)	< 0.001
Calcium, mg/dL	0.73 (0.63, 0.84)	< 0.001	0.73 (0.64, 0.82)	< 0.001	0.79 (0.71, 0.89)	< 0.001
Chloride, mmol/L	1.06 (1.04, 1.07)	< 0.001	1.05 (1.03, 1.06)	< 0.001	1.04 (1.02, 1.05)	< 0.001
Creatinine, mg/dL	1.14 (1.09, 1.20)	< 0.001	1.14 (1.10, 1.19)	< 0.001	1.13 (1.09, 1.18)	< 0.001
Sodium, mmol/L	1.08 (1.06, 1.10)	< 0.001	1.07 (1.05, 1.08)	< 0.001	1.05 (1.04, 1.07)	< 0.001
Potassium, mmol/L	1.34 (1.23, 1.46)	< 0.001	1.29 (1.19, 1.40)	< 0.001	1.32 (1.23, 1.41)	< 0.001
INR	1.68 (1.50, 1.89)	< 0.001	1.69 (1.52, 1.87)	< 0.001	1.64 (1.48, 1.81)	< 0.001

ALT, U/L	1.00 (1.00, 1.00)	0.243	1.00 (1.00, 1.00)	0.111	1.00 (1.00, 1.00)	0.418
Myocardial infarction	1.42 (1.13, 1.79)	0.003	1.57 (1.28, 1.92)	< 0.001	1.66 (1.39, 1.99)	< 0.001
Congestive heart failure	1.67 (1.37, 2.05)	< 0.001	1.87 (1.57, 2.23)	< 0.001	1.90 (1.62, 2.23)	< 0.001
Peripheral vascular disease	0.96 (0.69, 1.32)	0.783	0.97 (0.72, 1.29)	0.819	1.11 (0.86, 1.42)	0.423
Chronic pulmonary disease	0.98 (0.76, 1.26)	0.862	1.06 (0.84, 1.32)	0.629	1.09 (0.90, 1.33)	0.381
Diabetes	1.24 (1.03, 1.50)	0.024	1.26 (1.06, 1.49)	0.008	1.27 (1.09, 1.48)	0.002
Hypertension	1.31 (1.03, 1.67)	0.026	1.20 (0.98, 1.48)	0.083	1.29 (1.06, 1.56)	0.010
Renal disease	1.40 (1.12, 1.76)	0.003	1.54 (1.26, 1.88)	< 0.001	1.66 (1.39, 1.97)	< 0.001
Malignant cancer	1.90 (1.43, 2.53)	< 0.001	2.34 (1.84, 2.98)	< 0.001	2.62 (2.12, 3.24)	< 0.001
Severe liver disease	2.18 (1.16, 4.07)	0.015	3.04 (1.85, 4.99)	< 0.001	2.64 (1.61, 4.33)	< 0.001
Charlson comorbidity index	1.17 (1.13, 1.20)	< 0.001	1.20 (1.16, 1.23)	< 0.001	1.22 (1.19, 1.25)	< 0.001
APS III score	1.03 (1.03, 1.03)	< 0.001	1.03 (1.03, 1.03)	< 0.001	1.03 (1.03, 1.03)	< 0.001
SAPS II score	1.06 (1.06, 1.07)	< 0.001	1.06 (1.06, 1.07)	< 0.001	1.06 (1.06, 1.07)	< 0.001
Sepsis	2.73 (2.28, 3.27)	< 0.001	2.72 (2.32, 3.20)	< 0.001	2.60 (2.25, 3.01)	< 0.001
IMV	4.39 (3.65, 5.27)	< 0.001	3.90 (3.32, 4.59)	< 0.001	3.15 (2.73, 3.64)	< 0.001
RRT	2.49 (1.73, 3.58)	< 0.001	2.66 (1.93, 3.69)	< 0.001	2.61 (1.93, 3.53)	< 0.001
Vasoactive drug	2.72 (2.23, 3.33)	< 0.001	2.52 (2.09, 3.03)	< 0.001	2.36 (1.99, 2.80)	< 0.001

Abbreviations: ALT, alanine aminotransferase; APS III, Acute Physiology Score III; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; MBP, mean blood pressure; RRT, renal replacement therapy; SAPS II, Simplified Acute Physiology Score II; SpO₂, peripheral oxygen saturation; TyG, triglyceride-glucose; WBC, white blood cell.

Table S7 Proportional hazards assumption test (scaled Schoenfeld residuals)

Variable	30-day mortality		90-day mortality		365-day mortality	
	χ^2	<i>P</i> -value	χ^2	<i>P</i> -value	χ^2	<i>P</i> -value
TyG index	2.611	0.106	3.084	0.079	7.585	0.006
Demographic variables						
Sex	0.352	0.553	0.003	0.955	0.069	0.793
Age	1.603	0.206	0.549	0.459	2.222	0.136
Race	0.271	0.603	0.145	0.703	0.124	0.725
Weight	0.552	0.457	1.783	0.182	4.493	0.034
Vital signs						
Heart rate	0.105	0.746	0.136	0.712	0.935	0.334
Mean blood pressure	0.020	0.889	0.424	0.515	0.474	0.491
Respiratory rate	0.130	0.719	0.215	0.643	1.152	0.283
Temperature	0.000	0.999	1.164	0.281	6.769	0.009
SpO ₂	0.599	0.439	0.480	0.488	2.216	0.137
Laboratory parameters						
Hemoglobin	7.414	0.006	6.570	0.010	3.165	0.075
Platelets	0.045	0.831	0.511	0.475	1.151	0.283
WBC	0.001	0.976	0.789	0.375	3.606	0.058
Anion gap	2.504	0.114	3.899	0.048	4.504	0.034
Bicarbonate	0.010	0.921	1.348	0.246	1.647	0.199
BUN	1.476	0.224	0.822	0.365	0.037	0.848
Calcium	0.389	0.533	0.109	0.742	1.893	0.169
Chloride	18.502	< 0.001	24.560	< 0.001	39.905	< 0.001
Creatinine	1.047	0.306	0.854	0.355	0.005	0.945
Sodium	18.839	< 0.001	27.776	< 0.001	39.908	< 0.001
Potassium	0.944	0.331	3.934	0.047	0.199	0.656
INR	0.001	0.976	0.129	0.720	0.734	0.391
ALT	0.025	0.875	0.002	0.961	1.284	0.257
Comorbidities						
Myocardial infarction	2.842	0.092	5.981	0.014	7.347	0.007
Congestive heart failure	4.406	0.036	11.844	0.001	9.637	0.002
Peripheral vascular disease	0.403	0.525	0.149	0.700	1.324	0.250
Chronic pulmonary disease	0.536	0.464	0.191	0.662	0.767	0.381
Hypertension	0.971	0.324	0.217	0.642	0.232	0.630
Renal disease	2.187	0.139	6.734	0.009	8.418	0.004
Malignant cancer	11.854	0.001	25.979	< 0.001	31.526	< 0.001
Severe liver disease	4.137	0.042	8.847	0.003	1.792	0.181
Sepsis	45.148	< 0.001	25.369	< 0.001	10.161	0.001
Charlson comorbidity index	11.305	0.001	28.825	< 0.001	40.315	< 0.001
Interventions						
IMV	3.818	0.051	10.078	0.002	37.186	< 0.001
RRT	5.795	0.016	5.993	0.014	2.855	0.091
Vasoactive drug	1.105	0.293	0.131	0.718	1.281	0.258

Diabetes	0.036	0.850	0.127	0.722	0.245	0.620
GLOBAL (df = 39)	157.549	< 0.001	184.963	< 0.001	220.492	< 0.001

Abbreviations: ALT, alanine aminotransferase; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; RRT, renal replacement therapy; SpO₂, peripheral oxygen saturation; WBC, white blood cell.

PH assumption was tested using scaled Schoenfeld residuals.

Table S8 Time-dependent coefficient Cox regression model for 365-day mortality (including TyG $\times$ time interaction term)

Variable	HR (95% CI)	P-value
TyG index	1.18 (1.03, 1.34)	0.014
TyG $\times$ time interaction	1.00 (1.00, 1.00)	0.043
Demographic variables		
Sex (female vs. male)	0.88 (0.74, 1.04)	0.139
Age	1.03 (1.03, 1.04)	< 0.001
Race (Black vs. White)	0.77 (0.57, 1.04)	0.085
Race (Asian vs. White)	0.95 (0.60, 1.49)	0.819
Race (Other vs. White)	1.13 (0.96, 1.33)	0.151
Weight	0.99 (0.99, 0.99)	< 0.001
Vital signs		
Heart rate	1.01 (1.00, 1.01)	0.028
Mean blood pressure	1.00 (0.99, 1.01)	0.812
Respiratory rate	1.01 (1.00, 1.02)	0.135
Temperature	1.19 (1.05, 1.35)	0.007
SpO ₂	0.99 (0.98, 1.01)	0.284
Laboratory parameters		
Hemoglobin	0.97 (0.93, 1.00)	0.073
Platelets	1.00 (1.00, 1.00)	0.422
WBC	1.01 (1.00, 1.01)	0.129
Anion gap	1.03 (1.00, 1.05)	0.019
Bicarbonate	0.99 (0.97, 1.02)	0.512
BUN	1.01 (1.00, 1.01)	0.083
Calcium	0.98 (0.86, 1.11)	0.700
Chloride	0.98 (0.96, 1.00)	0.095
Creatinine	1.00 (0.90, 1.10)	0.949
Sodium	1.04 (1.02, 1.07)	0.001
Potassium	1.14 (1.04, 1.25)	0.005
INR	1.27 (1.11, 1.45)	< 0.001
ALT	1.00 (1.00, 1.00)	0.297
Comorbidities		
Myocardial infarction	0.93 (0.75, 1.14)	0.475
Congestive heart failure	1.01 (0.84, 1.22)	0.917
Peripheral vascular disease	0.77 (0.60, 1.00)	0.053
Chronic pulmonary disease	0.75 (0.60, 0.92)	0.007
Hypertension	0.88 (0.71, 1.08)	0.221
Renal disease	0.67 (0.53, 0.87)	0.002
Malignant cancer	1.32 (0.99, 1.75)	0.056
Severe liver disease	1.50 (0.86, 2.61)	0.153
Sepsis	1.27 (1.07, 1.50)	0.007
Charlson comorbidity index	1.14 (1.08, 1.20)	< 0.001
Interventions		

IMV	2.43 (2.01, 2.95)	< 0.001
RRT	0.97 (0.63, 1.48)	0.870
Vasoactive drug use	1.05 (0.86, 1.30)	0.619
Diabetes	0.95 (0.79, 1.14)	0.573

Abbreviations: ALT, alanine aminotransferase; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; RRT, renal replacement therapy; SpO₂, peripheral oxygen saturation; WBC, white blood cell.

Table S9 Association between TyG index and 30-day, 90-day, and 365-day mortality excluding participants with missing covariates

Outcome	Unadjusted		<i>P</i> -value	Model 1		<i>P</i> -value	Model 2		<i>P</i> -value	Model 3		<i>P</i> -value	Model 4		<i>P</i> -value	Model 5		<i>P</i> -value
30-day mortality	1.45	(1.28, 1.64)	< 0.001	1.66	(1.46, 1.88)	< 0.001	1.63	(1.43, 1.85)	< 0.001	1.22	(1.05, 1.41)	0.010	1.11	(0.95, 1.29)	0.175	1.13	(0.96, 1.32)	0.136
90-day mortality	1.39	(1.24, 1.56)	< 0.001	1.61	(1.43, 1.80)	< 0.001	1.56	(1.39, 1.75)	< 0.001	1.20	(1.05, 1.38)	0.008	1.09	(0.95, 1.25)	0.216	1.11	(0.96, 1.28)	0.174
365-day mortality	1.32	(1.19, 1.47)	< 0.001	1.56	(1.4, 1.73)	< 0.001	1.49	(1.33, 1.66)	< 0.001	1.16	(1.03, 1.32)	0.016	1.05	(0.93, 1.2)	0.412	1.08	(0.95, 1.24)	0.238

Notes: data presented are HRs and 95% CIs.

Model 1 was adjusted for sex, age, race, and weight.

Model 2 was further adjusted for myocardial infarction, congestive heart failure, peripheral vascular disease, chronic pulmonary disease, hypertension, renal disease, malignant cancer, and severe liver disease.

Model 3 was additionally adjusted for heart rate, MBP, respiratory rate, temperature, SpO₂, hemoglobin, platelets, WBC, anion gap, bicarbonate, BUN, calcium, chloride, creatinine, sodium, potassium, INR, and ALT.

Model 4 was adjusted for Model 3 + Charlson comorbidity index, sepsis, IMV, RRT, and vasoactive drug use.

Model 5 was adjusted for Model 4 + diabetes.

Abbreviations: ALT, alanine aminotransferase; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; MBP, mean blood pressure; RRT, renal replacement therapy; SpO₂, peripheral oxygen saturation; TyG, triglyceride-glucose; WBC, white blood cell.

Table S10 Association between TyG index and 30-day, 90-day, and 365-day mortality in individuals without diabetes and with cerebrovascular disease

Subgroup	Total	Mortality, n (%)	Crude HR (95% CI)	P-value	Adjusted HR (95% CI)	P-value	P for interaction
30-day mortality							
Prediabetes							
No	1761	316 (17.9)	1.62 (1.39, 1.89)	< 0.001	1.28 (1.04, 1.58)	0.020	0.950
Yes	57	4 (7.0)	2.11 (0.40, 11.24)	0.381	NA*	0.999	
90-day mortality							
Prediabetes							
No	1761	390 (22.1)	1.59 (1.38, 1.83)	< 0.001	1.23 (1.02, 1.49)	0.034	0.562
Yes	57	6 (10.5)	2.43 (0.63, 9.45)	0.200	NA*	0.999	
365-day mortality							
Prediabetes							
No	1761	485 (27.5)	1.45 (1.27, 1.66)	< 0.001	1.17 (0.98, 1.39)	0.089	0.505
Yes	57	8 (14.0)	1.58 (0.49, 5.07)	0.442	NA*	0.999	

Note: Adjusted for sex, age, race, weight, myocardial infarction, congestive heart failure, peripheral vascular disease, chronic pulmonary disease, hypertension, renal disease, malignant cancer, severe liver disease, heart rate, mean blood pressure, respiratory rate, temperature, peripheral oxygen saturation, hemoglobin, platelets, white blood cell, anion gap, bicarbonate, blood urea nitrogen, calcium, chloride, creatinine, sodium, potassium, international normalized ratio, alanine aminotransferase, Charlson comorbidity index, sepsis, invasive mechanical ventilation, renal replacement therapy, and vasoactive drug use.

*Not estimated due to extremely limited sample size and event rates. These point estimates are highly unstable and should not be interpreted.

Abbreviations: HR, hazard ratio; CI, confidence interval.

Table S11 Association between TyG index and 30-day, 90-day, and 365-day mortality in individuals with diabetes

Subgroup	Total	Mortality, (%)	n	Crude (95% CI)	HR	P-value	Adjusted (95% CI)	HR	P-value	P for interaction
30-day mortality										
T1D	10	1 (10.0)		0.40 (0.02, 9.88)		0.575	NA*		0.999	0.202
T2D	433	89 (20.6)		1.37 (1.06, 1.77)		0.017	1.16 (0.80, 1.70)		0.434	0.688
90-day mortality										
T1D	10	1 (10.0)		0.40 (0.02, 9.88)		0.575	NA*		0.999	0.243
T2D	433	112 (25.9)		1.25 (0.99, 1.59)		0.059	1.10 (0.79, 1.52)		0.586	0.995
365-day mortality										
T1D	10	4 (40.0)		1.13 (0.26, 4.95)		0.868	NA*		0.805	0.838
T2D	433	135 (31.2)		1.27 (1.02, 1.57)		0.030	1.23 (0.92, 1.65)		0.164	0.484

Note: Adjusted for sex, age, race, weight, myocardial infarction, congestive heart failure, peripheral vascular disease, chronic pulmonary disease, hypertension, renal disease, malignant cancer, severe liver disease, heart rate, mean blood pressure, respiratory rate, temperature, peripheral oxygen saturation, hemoglobin, platelets, white blood cell, anion gap, bicarbonate, blood urea nitrogen, calcium, chloride, creatinine, sodium, potassium, international normalized ratio, alanine aminotransferase, Charlson comorbidity index, sepsis, invasive mechanical ventilation, renal replacement therapy, and vasoactive drug use.

*Not estimated due to extremely limited sample size and event rates. These point estimates are highly unstable and should not be interpreted.

Abbreviations: HR, hazard ratio; CI, confidence interval, T1D, type 1 diabetes; T2D, type 2 diabetes.

Table S12 Association between TyG index and 30-day, 90-day, and 365-day mortality in critically ill patients with cerebrovascular disease

Outcome	Unadjusted	<i>P</i> -value	Model 1	<i>P</i> -value	Model 2	<i>P</i> -value	Model 3	<i>P</i> -value	Model 4	<i>P</i> -value	Model 5	<i>P</i> -value
30-day mortality	1.42 (1.27, 1.59)	< 0.001	1.69 (1.51, 1.90)	< 0.001	1.65 (1.47, 1.85)	< 0.001	1.25 (1.10, 1.43)	0.001	1.06 (0.93, 1.22)	0.365	1.09 (0.94, 1.25)	0.259
90-day mortality	1.38 (1.25, 1.53)	< 0.001	1.65 (1.49, 1.83)	< 0.001	1.60 (1.44, 1.78)	< 0.001	1.26 (1.12, 1.42)	< 0.001	1.07 (0.94, 1.21)	0.299	1.09 (0.96, 1.24)	0.193
365-day mortality	1.30 (1.19, 1.43)	< 0.001	1.59 (1.44, 1.75)	< 0.001	1.52 (1.38, 1.68)	< 0.001	1.21 (1.09, 1.35)	< 0.001	1.03 (0.92, 1.15)	0.577	1.05 (0.94, 1.19)	0.384

Notes: data presented are HRs and 95%CIs.

Model 1 was adjusted for sex, age, race, and weight.

Model 2 was further adjusted for myocardial infarction, congestive heart failure, peripheral vascular disease, chronic pulmonary disease, hypertension, renal disease, malignant cancer, and severe liver disease.

Model 3 was additionally adjusted for heart rate, MBP, respiratory rate, temperature, SpO₂, hemoglobin, platelets, WBC, anion gap, bicarbonate, BUN, calcium, chloride, creatinine, sodium, potassium, INR, and ALT.

Model 4 was adjusted for Model 3 + Charlson comorbidity index, APS III, SAPS II, sepsis, IMV, RRT, and vasoactive drug use.

Model 5 was adjusted for Model 4 + diabetes.

Abbreviations: ALT, alanine aminotransferase; APS III, Acute Physiology Score III; BUN, blood urea nitrogen; IMV, invasive mechanical ventilation; INR, international normalized ratio; MBP, mean blood pressure; RRT, renal replacement therapy; SAPS II, Simplified Acute Physiology Score II; SpO₂, peripheral oxygen saturation; TyG, triglyceride-glucose; WBC, white blood cell.

Table S13 Additive interaction analysis between TyG index and diabetes status

Measure		30-day mortality		90-day mortality		365-day mortality	
		HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value
HR	(diabetes-, TyG-)	1.00 (ref)		1.00 (ref)		1.00 (ref)	
HR	(diabetes+, TyG-)	1.63 (1.03, 2.57)	0.04	1.55 (1.03, 2.34)	0.04	1.45 (1.00, 2.09)	0.05
HR	(diabetes-, TyG+)	1.34 (1.04, 1.73)	0.02	1.33 (1.06, 1.67)	0.01	1.30 (1.07, 1.59)	0.01
HR	(diabetes+, TyG+)	1.19 (0.88, 1.59)	0.26	1.19 (0.91, 1.54)	0.20	1.15 (0.91, 1.44)	0.25
Multiplicative scale		0.54 (0.33, 0.89)	0.02	0.58 (0.37, 0.90)	0.02	0.61 (0.41, 0.90)	0.01
RERI		-0.78 (-1.57, 0.00)	0.97	-0.69 (-1.38, -0.01)	0.98	-0.60 (-1.17, -0.03)	0.98
AP		-0.66 (-1.31, -0.01)	0.02	-0.59 (-1.15, -0.02)	0.02	-0.53 (-1.02, -0.03)	0.02
SI		0.19 (0.04, 0.92)	0.45	0.21 (0.05, 0.86)	0.45	0.20 (0.04, 0.91)	0.45

Abbreviations: AP, attributable proportion; RERI, relative excess risk due to interaction; SI, synergy index; TyG+, TyG $\geq$ 8.497; TyG-, TyG < 8.497. Models were adjusted for all covariates as in Model 5.