Table 1: Main differences of variables between thrombolysis and anti-platelet groups

Variables	TROM (n = 91)	ANTP (n = 77)	Z/x^2	P value
Demographics				
Gender (male), n (%)	39 (23.2)	43 (25.6)	2.815	0.121
Age (years), median (IQR)*	72 (14)	76 (12)	-2.779	0.005
Length (w), median (IQR)*	149.6 (140.9)	90.7 (69.6)	-3.463	0.001
OTT (h), median (IQR)	3.7 (1.5)	4.2 (2.2)	-1.855	0.064
Vital signs				
NIHSS Scale, median (IQR)*	13 (11)	5 (5)	-7.443	0.000
BT (℃), median (IQR)	36.5 (0.6)	36.5 (0.5)	-0.140	0.889
HR (/min), median (IQR)	80 (19)	80 (18)	-0.151	0.880
BPS (mmHg), median (IQR)	154 (35)	150 (41)	-0.997	0.319
BPD (mmHg), median (IQR)	85 (21)	80 (21)	-1.951	0.051
Laboratory tests				
WBC (×10^9/L), median (IQR)	8.66 (3.98)	8.77 (2.27)	-0.347	0.729
PLT (×10^9/L), median (IQR)	218.00 (68.00)	206.70 (65.00)	-0.275	0.783
HCT, median (IQR)	0.39 (0.05)	0.38 (0.08)	-1.653	0.098
INR, median (IQR)	1.02 (0.21)	1.06 (0.11)	-1.132	0.258
APTT (s), median (IQR)	34.40 (5.60)	34.90 (4.53)	-0.939	0.348
FIB (g/L), median (IQR)	3.45 (1.09)	3.45 (0.92)	-1.187	0.235
Hs-CRP (mg/L), median (IQR)	11.33 (17.99)	10.37 (20.01)	-0.672	0.502
GLU (mmol/L),median (IQR)	7.70 (3.40)	7.84 (1.84)	-0.624	0.533
Bicarbonate (mmol/L), median (IQR)	23.50 (3.50)	23.17 (2.40)	-0.178	0.858
TG (mmol/L), median (IQR)	1.05 (0.67)	1.04 (0.71)	-0.516	0.606
CH (mmol/L), median (IQR)	5.04 (1.57)	4.95 (1.11)	-0.196	0.845
TPR (mg/L), median (IQR)*	0.04 (0.17)	0.14 (0.30)	-2.237	0.025
TP (g/L), median (IQR)	64.20 (8.50)	62.73 (5.50)	-1.565	0.118
ALT (iu/L), median (IQR)	19.00 (10.00)	19.48 (9.39)	-0.105	0.916
CR (mmol/L), median (IQR)	80.00 (33.50)	87.00 (33.35)	-1.004	0.315
TOAST classifications				
Atherosclerotic, n (%)	63 (37.5)	56 (33.3)		
Cardiac embolism, n (%)	22 (13.1)	17 (10.1)	0.288	0.866
Small artery, n (%)	6 (3.6)	4 (2.4)		
OCSP classifications*				
Total anterior, n (%)	18 (10.7)	4 (2.4)		
Partial anterior, n (%)	49 (29.2)	48 (28.6)		
Posterior, n (%)	16 (9.5)	18 (10.7)	7.993	0.046
Lacunar, n (%)	8 (4.8)	7 (4.2)		
Hemorrhagic transformations*				
None, n (%)	70 (41.7)	74 (44.0)		
Hemorrhagic Infarction, n (%)	9 (5.4)	3 (1.8)	14.042	0.001
Parenchymal, n (%)	12 (7.1)	0 (0)		
Risk factors				
Hypertension, n (%)*	64 (38.1)	42 (25.0)	4.463	0.038
Diabetes, n (%)	23 (13.7)	17 (10.1)	0.235	0.717
Heart arrhythmia, n (%)*	20 (11.9)	6 (3.6)	6.416	0.017
Heart failure, n (%)*	29 (17.3)	9 (5.4)	9.704	0.003
Smoking, n (%)	24 (14.3)	26 (15.5)	1.090	0.314
Stroke history, n (%)	19 (11.3)	13 (7.7)	0.432	0.559
Family history of stroke, n (%)*	7 (4.2)	0 (0)	6.181	0.016
Outcome				
Favorable, n (%)	44 (26.2)	43 (25.6)	0.938	0.356
Deceased, n (%)	30 (17.9)	15 (8.9)	3.868	0.056

*P < 0.05 (two tailed); TROM: thrombolysis group; ANTP: anti-platelet group; OTT: onset to treatment time; IQR: interquartile range; NIHSS: national institute of health stroke scale; BT: body temperature; HR: heart rate; BPS: systolic blood pressure; BPD: diastolic blood pressure; WBC: white blood cell count; PLT: platelet count; HCT: hematocrit; INR: international normalized ratio; APTT: activated partial thromboplastin time; FIB: fibrinogen; hs-CRP: high sensitivity C reactive protein; GLU: blood glucose; TG: triglyceride; CH: total cholesterol; TRP: troponin; TP: total protein; ALT: aminotransferase; CR: serum creatinine

37% of total AIS and supposed to be "mild", did not reach a favorable end.[3] We aimed to compare the prognosis between thrombolysis and ordinary anti-platelet strategies in Chinese AIS.

METHODS

Our hospital is one of the tertiary teaching institute attached to the Guangzhou Medical University, which is financed by government and located in the central downtown of Guangzhou city, having a total of 1,200 beds and supplies emergency medical services covering 1.5 million residents and admits more than 500 documented stroke patients each year. The number of inhabitants in the city has exceeded 12 million. One of the authors (LN) was ever a collaborator of the imaging-based thrombolysis trial in acute ischemic stroke-II.[4]

We searched the patients who had been consecutively registered in our database from January 2005 to June 2012.

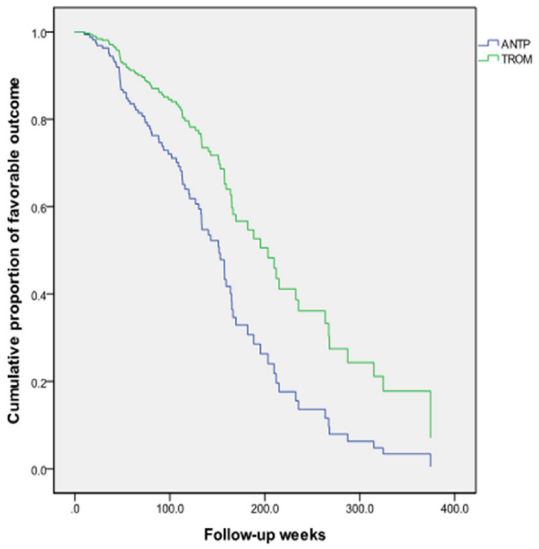

Figure 1: Cox regression. Estimation of favorable outcome proportions between TROM and ANTP. TROM: thrombolysis group; ANTP: anti-platelet group; $P = 0.026$

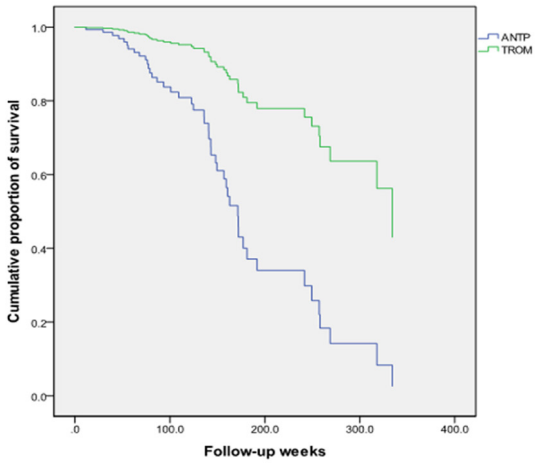

Figure 2: Cox regressions. Estimation of survival proportions between TROM and ANTP. TROM: thrombolysis group; ANTP: anti-platelet group; $P = 0.000$

The survey was approved by The Ethics Committee of the First Affiliated Hospital of Guangzhou Medical University. The inclusion criteria were the following: (1) primary diagnoses of cerebral infarction coded with International Classification of Diseases 10th edition I63 to I69; (2) symptoms onset to treatment time was within 6 h; (3) thrombolysis with alteplase as per NINDS trial protocol or ordinary anti-platelet therapy such as aspirin and clopidegrel. Exclusion criteria included: (1) symptoms and signs diminished rapidly without apparent neurological deficits; (2) no visible lesions on diffusion weighted image in magnetic resonance imaging; (3) cerebral infarction caused by serious metabolic in-balance or infections. Patients were divided into thrombolysis group and ordinary anti-platelet one. The endpoints were defined as favorable (modified Rankin Scale 0-2) or survival. Follow-up were conducted through December, 2012 by structured telephone interview.

Data for variables nearest to the time point of treatment were collected using Microsoft® Office Excel 2003 (Microsoft Corporation, Redmond, WA, USA). The variables included demographics, vital signs, laboratory tests and radiological manifestations. Known risk factors such as cardiac abnormalities, hypertension and diabetes, smoking and prior stroke were included. The time elapse before treatment was recorded. National Institute of Health Stroke Scale (NIHSS) scores were recorded in documents and reviewed by an author (WY) who had passed the NIHSS training course in 2009.

Statistical analysis

For baseline independent variables, quantitative missing values were replaced by linear regression estimates. We used binary correlations to test the collinearities of independent variables and made combinations or reductions under professional considerations. Differences between groups were tested by Mann-Whitney *U*-test, Pearson chi-square and Fisher's exact test. In Kaplan-Meier curve estimation and Cox regression, log rank test and backward step-wise likelihood chi-square test were used respectively. The inclusion and exclusion criterion of stepping probability was 0.05 and 0.10 respectively. $\alpha = 0.05$ (two sided) was considered significant. Data were calculated by IBM® SPSS® statistics version 19.

RESULTS

Of the 2,949 AIS patients screened, one hundred and eighty three met the inclusion and exclusion criteria. Fifteen patients lost follow-up. One hundred and sixty eight individuals entered the final analyses. Ninety one were included in thrombolysis group (TROM) and 77 in anti-platelet (ANTP) one. Male accounted for 82 (48.8%) and female 86 (51.2%). The median of age was 74 [interquartile range (IQR) 67-79], NIHSS 9 (IQR 5-17) and onset to treatment time 3.9 h (IQR 3.0-4.8) respectively. The median length of follow-up was 112 (IQR 63.4-163.8) weeks. Differences of variables between two groups were listed in Table 1. Patients in TROM were younger, had higher NIHSS scales and lower serum troponin level, higher proportion of total anterior cerebral infarction, more hemorrhagic transformations and higher proportions of hypertension, heart abnormalities and family history of stroke. By the end of December 31, 2012, 87 patients (51.8%) reached favorable outcome while 81 (48.2%) unfavorable. Death occurred in 45 (26.8%) cases. No significant differences were detected between TROM and ANTP. In Kaplan-Meier curve estimation, patients in TROM showed a longer favorable period of time than those in ANTP [212 weeks 95% CI 169.5-254.5 *vs.* 126.9 weeks 95% confidence interval (CI) 105.2-148.6; Log-Rank test $x^2 = 19.632$, $P = 0.000$], while no significance was seen in survival time (258.0 weeks 95% CI 231.5-284.5 *vs.* 160.8 weeks 95% CI 153.0-168.5; Log-Rank test $x^2 = 2.427$, $P = 0.119$). After adjusting covariates of age, gender