**Supplemental S1. Association between diabetes status and mortality in first-ever stroke patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | From onset (n=6331) |  | From 29 days after onset (n=5989) |
|  | Free of diabetes | Good diabetes control(n=1045) | Poor diabetes control(n=1077) | p for trend |  | Good diabetes control(n=950) | Poor diabetes control(n=1037) | p for trend |
|  | HR (95%CI) | p-value | HR (95%CI) | p-value |  | HR (95%CI) | p-value | HR (95%CI) | p-value |
|  | *Large-artery infarction* |
| Model 1 | Reference | 1.00 (0.65-1.53) | 0.987 | 1.57 (1.09-2.26) | 0.016 | 0.002 |  | 1.08 (0.79-1.46) | 0.640 | 1.71 (1.31-2.24) | <0.001 | <0.001 |
| Model 2 | Reference | 1.16 (0.86-1.56) | 0.329 | 1.41 (1.07-1.85) | 0.013 | 0.013 |  | 1.09 (0.79-1.50) | 0.598 | 1.61 (1.22-2.13) | <0.001 | 0.001 |
| Model 3 | Reference | 1.19 (0.88-1.60) | 0.251 | 1.40 (1.07-1.84) | 0.016 | 0.013 |  | 1.12 (0.81-1.54) | 0.496 | 1.61 (1.21-2.13) | 0.001 | 0.001 |
| Model 4 | Reference | 1.13 (0.84-1.53) | 0.412 | 1.40 (1.07-1.84) | 0.015 | 0.017 |  | 1.06 (0.77-1.47) | 0.704 | 1.60 (1.21-2.13) | 0.001 | 0.002 |
|  | *Cardioembolic infarction* |
| Model 1 | Reference | 1.10 (0.80-1.51) | 0.569 | 0.97 (0.66-1.44) | 0.895 | 0.012 |  | 1.29 (1.00-1.66) | 0.050 | 1.10 (0.81-1.49) | 0.544 | 0.209 |
| Model 2 | Reference | 1.34 (1.07-1.69) | 0.012 | 1.24 (0.93-1.64) | 0.141 | 0.043 |  | 1.22 (0.94-1.59) | 0.141 | 1.11 (0.80-1.54) | 0.527 | 0.394 |
| Model 3 | Reference | 1.31 (1.04-1.65) | 0.023 | 1.18 (0.89-1.57) | 0.251 | 0.100 |  | 1.20 (0.92-1.56) | 0.186 | 1.10 (0.79-1.52) | 0.587 | 0.471 |
| Model 4 | Reference | 1.45 (1.14-1.83) | 0.002 | 1.30 (0.97-1.74) | 0.082 | 0.014 |  | 1.32 (1.00-1.73) | 0.048 | 1.17 (0.84-1.64) | 0.352 | 0.195 |
|  | *Lacunar infarction* |
| Model 1 | Reference | 1.27 (0.68-2.38) | 0.458 | 1.88 (1.07-3.29) | 0.028 | 0.016 |  | 1.24 (0.82-1.89) | 0.310 | 1.51 (1.00-2.28) | 0.050 | 0.043 |
| Model 2 | Reference | 1.04 (0.67-1.64) | 0.851 | 1.60 (1.05-2.43) | 0.030 | 0.071 |  | 1.01 (0.64-1.59) | 0.967 | 1.49 (0.97-2.29) | 0.072 | 0.161 |
| Model 3 | Reference | 1.01 (0.65-1.59) | 0.954 | 1.66 (1.08-2.55) | 0.020 | 0.065 |  | 0.98 (0.62-1.55) | 0.943 | 1.55 (1.00-2.40) | 0.050 | 0.142 |
| Model 4 | Reference | 1.17 (0.72-1.88) | 0.527 | 1.72 (1.11-2.66) | 0.014 | 0.031 |  | 1.13 (0.70-1.84) | 0.615 | 1.59 (1.02-2.49) | 0.040 | 0.078 |
| Adjusted HRs and 95% CIs for mortality risk are shown according to diabetes status. Adjusted variables were age, sex for model 1, variables in model 1 plus smoking status and modified Rankin Scale before onset for model 2, variables in model 2 plus systolic blood pressure, LDLC, and HDLC for model 3, and variables in model 2 plus history of hypertension, history of dyslipidemia, and history of atrial fibrillation for model 4. Abbreviations: HR, hazard ratio; CI, confidence interval. |

**Supplemental S2. Association between HbA1c status and mortality in first-ever stroke patients (n=6331)**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Diabetes |  |
|  | Free of diabetes (n=4209) | 1st Tertile HbA1c ≤ 6.5%(n=682) |  | 2nd Tertile 6.5% < HbA1c ≤ 7.5%(n=722) |  | 3rd Tertile HbA1c > 7.5%(n=718) | p for trend |
|  | HR (95%CI) | p-value |  | HR (95%CI) | p-value |  | HR (95%CI) | p-value |
| *All stroke* |  |  |  |  |  |  |  |  |  |  |
| Model 1 | Reference | 1.31 (1.07-1.60) | 0.008 |  | 0.87 (0.69-1.10) | 0.254 |  | 1.17 (0.94-1.47) | 0.167 | 0.001 |
| Model 2 | Reference | 1.25 (1.07-1.46) | 0.004 |  | 1.08 (0.91-1.27) | 0.385 |  | 1.21 (1.02-1.43) | 0.031 | 0.015 |
| Model 3 | Reference | 1.19 (1.02-1.39) | 0.030 |  | 1.07 (0.91-1.26) | 0.443 |  | 1.22 (1.03-1.45) | 0.025 | 0.018 |
| Model 4 | Reference | 1.30 (1.11-1.52) | <0.001 |  | 1.13 (0.96-1.34) | 0.141 |  | 1.29 (1.08-1.53) | 0.004 | <0.001 |
| *Intracerebral hemorrhage* |
| Model 1 | Reference | 1.44 (0.92-2.24) | 0.110 |  | 1.35 (0.82-2.20) | 0.236 |  | 1.38 (0.76-2.53) | 0.293 | 0.060 |
| Model 2 | Reference | 1.07 (0.72-1.58) | 0.752 |  | 1.05 (0.68-1.61) | 0.826 |  | 1.38 (0.84-2.26) | 0.202 | 0.339 |
| Model 3 | Reference | 1.02 (0.68-1.52) | 0.924 |  | 1.04 (0.68-1.60) | 0.853 |  | 1.36 (0.83-2.24) | 0.219 | 0.394 |
| Model 4 | Reference | 1.15 (0.77-1.72) | 0.486 |  | 1.06 (0.68-1.66) | 0.790 |  | 1.45 (0.87-2.42) | 0.150 | 0.250 |
| *Cerebral infarction* |
| Model 1 | Reference | 1.18 (0.92-1.52) | 0.190 |  | 0.90 (0.68-1.19) | 0.471 |  | 1.30 (1.01-1.68) | 0.042 | <0.001 |
| Model 2 | Reference | 1.21 (1.01-1.45) | 0.044 |  | 1.16 (0.96-1.39) | 0.117 |  | 1.23 (1.02-1.50) | 0.031 | 0.008 |
| Model 3 | Reference | 1.17 (0.97-1.40) | 0.101 |  | 1.15 (0.96-1.39) | 0.132 |  | 1.24 (1.03-1.51) | 0.026 | 0.009 |
| Model 4 | Reference | 1.24 (1.03-1.49) | 0.023 |  | 1.23 (1.02-1.49) | 0.030 |  | 1.31 (1.08-1.59) | 0.007 | <0.001 |
| *Large-artery infarction* |
| Model 1 | Reference | 1.32 (0.82-2.12) | 0.251 |  | 0.81 (0.48-1.35) | 0.414 |  | 1.81 (1.21-2.72) | 0.004 | 0.001 |
| Model 2 | Reference | 1.18 (0.83-1.69) | 0.361 |  | 1.11 (0.79-1.55) | 0.548 |  | 1.57 (1.16-2.13) | 0.003 | 0.008 |
| Model 3 | Reference | 1.22 (0.85-1.74) | 0.288 |  | 1.09 (0.78-1.53) | 0.615 |  | 1.61 (1.19-2.19) | 0.002 | 0.006 |
| Model 4 | Reference | 1.17 (0.82-1.68) | 0.391 |  | 1.07 (0.76-1.50) | 0.700 |  | 1.58 (1.16-2.14) | 0.003 | 0.010 |
| *Cardioembolic infarction* |
| Model 1 | Reference | 1.11 (0.76-1.60) | 0.596 |  | 0.99 (0.66-1.50) | 0.979 |  | 1.02 (0.62-1.69) | 0.925 | 0.026 |
| Model 2 | Reference | 1.32 (1.01-1.73) | 0.041 |  | 1.45 (1.10-1.91) | 0.008 |  | 1.02 (0.69-1.51) | 0.923 | 0.083 |
| Model 3 | Reference | 1.24 (0.95-1.63) | 0.115 |  | 1.49 (1.13-1.97) | 0.004 |  | 0.93 (0.62-1.37) | 0.700 | 0.169 |
| Model 4 | Reference | 1.39 (1.06-1.82) | 0.017 |  | 1.60 (1.20-2.14) | 0.002 |  | 1.09 (0.74-1.62) | 0.664 | 0.026 |
| *Lacunar infarction* |
| Model 1 | Reference | 1.52 (0.76-3.05) | 0.240 |  | 1.41 (0.70-2.84) | 0.330 |  | 1.77 (0.92-3.44) | 0.089 | 0.019 |
| Model 2 | Reference | 1.10 (0.65-1.87) | 0.725 |  | 1.12 (0.67-1.88) | 0.662 |  | 1.73 (1.07-2.80) | 0.025 | 0.069 |
| Model 3 | Reference | 1.06 (0.63-1.81) | 0.818 |  | 1.11 (0.66-1.86) | 0.704 |  | 1.83 (1.12-2.97) | 0.015 | 0.061 |
| Model 4 | Reference | 1.21 (0.70-2.09) | 0.494 |  | 1.25 (0.73-2.13) | 0.422 |  | 1.89 (1.15-3.09) | 0.012 | 0.029 |
| Adjusted HRs and 95% CIs for mortality risk are shown according to diabetes status. Adjusted variables were age, sex for model 1, variables in model 1 plus smoking status and modified Rankin Scale before onset for model 2, variables in model 2 plus systolic blood pressure, LDLC, and HDLC for model 3, and variables in model 2 plus history of hypertension, history of dyslipidemia, and history of atrial fibrillation for model 4. Abbreviations: HR, hazard ratio; CI, confidence interval. |

**Supplemental S3.** **Association between diabetes status and functional outcomes during hospitalization in first-ever stroke patients**

a) Survival analysis for evaluating the effects of diabetes status on functional outcome during hospitalization (mRS at discharge≧2)



b) Survival analysis for evaluating the effects of diabetes status on mortality during hospitalization (mRS at discharge = 6)



**Supplemental S4. Absolute and relative survival proportion of all strokes from 29 days after stroke onset in first-ever stroke patients**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | Survival proportion |  | Relative Survival Proportion |
|  | age | sex | General Japanese | Free of diabetes | Good diabetic control | Poor diabetic control |  | Free of diabetes | Good diabetic control | Poor diabetic control |
| Survival proportion at one years | 40 | male | 0.999 | 0.997 | 0.996 | 0.996 |  | 0.998 | 0.998 | 0.997 |
|  | female | 0.999 | 0.998 | 0.997 | 0.997 |  | 0.998 | 0.998 | 0.998 |
| 50 | male | 0.997 | 0.992 | 0.991 | 0.989 |  | 0.995 | 0.994 | 0.992 |
|  | female | 0.998 | 0.994 | 0.994 | 0.992 |  | 0.996 | 0.995 | 0.994 |
| 60 | male | 0.993 | 0.979 | 0.977 | 0.973 |  | 0.987 | 0.984 | 0.980 |
|  | female | 0.997 | 0.985 | 0.984 | 0.980 |  | 0.988 | 0.987 | 0.984 |
| 70 | male | 0.982 | 0.948 | 0.943 | 0.932 |  | 0.965 | 0.960 | 0.949 |
|  | female | 0.993 | 0.962 | 0.958 | 0.951 |  | 0.970 | 0.966 | 0.958 |
| 80 | male | 0.947 | 0.873 | 0.860 | 0.835 |  | 0.921 | 0.907 | 0.882 |
|  | female | 0.975 | 0.907 | 0.897 | 0.879 |  | 0.930 | 0.920 | 0.902 |
|  |  |  |  |  |  |  |  |  |  |
| Survival proportion at two years | 40 | male | 0.998 | 0.995 | 0.994 | 0.993 |  | 0.997 | 0.996 | 0.995 |
|  | female | 0.999 | 0.996 | 0.996 | 0.995 |  | 0.998 | 0.997 | 0.996 |
| 50 | male | 0.994 | 0.987 | 0.985 | 0.982 |  | 0.992 | 0.991 | 0.988 |
|  | female | 0.997 | 0.990 | 0.989 | 0.987 |  | 0.994 | 0.993 | 0.990 |
| 60 | male | 0.985 | 0.966 | 0.962 | 0.955 |  | 0.981 | 0.977 | 0.970 |
|  | female | 0.993 | 0.975 | 0.973 | 0.968 |  | 0.982 | 0.979 | 0.974 |
| 70 | male | 0.963 | 0.916 | 0.907 | 0.890 |  | 0.951 | 0.942 | 0.924 |
|  | female | 0.985 | 0.939 | 0.932 | 0.920 |  | 0.953 | 0.947 | 0.934 |
| 80 | male | 0.894 | 0.798 | 0.779 | 0.743 |  | 0.893 | 0.871 | 0.831 |
|  | female | 0.947 | 0.851 | 0.836 | 0.808 |  | 0.898 | 0.882 | 0.852 |
|  |  |  |  |  |  |  |  |  |  |
| Survival proportion at three years  | 40 | male | 0.996 | 0.993 | 0.992 | 0.990 |  | 0.996 | 0.995 | 0.994 |
|  | female | 0.998 | 0.995 | 0.994 | 0.993 |  | 0.997 | 0.996 | 0.995 |
| 50 | male | 0.991 | 0.981 | 0.979 | 0.975 |  | 0.990 | 0.988 | 0.984 |
|  | female | 0.995 | 0.986 | 0.985 | 0.982 |  | 0.991 | 0.990 | 0.987 |
| 60 | male | 0.977 | 0.952 | 0.947 | 0.937 |  | 0.975 | 0.970 | 0.960 |
|  | female | 0.990 | 0.965 | 0.962 | 0.955 |  | 0.975 | 0.972 | 0.964 |
| 70 | male | 0.943 | 0.882 | 0.870 | 0.848 |  | 0.936 | 0.923 | 0.899 |
|  | female | 0.976 | 0.914 | 0.905 | 0.888 |  | 0.937 | 0.928 | 0.910 |
| 80 | male | 0.838 | 0.727 | 0.702 | 0.656 |  | 0.867 | 0.837 | 0.783 |
|  | female | 0.918 | 0.795 | 0.776 | 0.739 |  | 0.867 | 0.845 | 0.805 |

Footnote:
\*Survival proportion of general Japanese was derived from death information in 2013 in vital statistics.

\*\*The relative survival was calculated by dividing survival rate of stroke patients by survival rate of Japanese population. Survival rate is higher than general population if it exceeds one, and conversely, survival rate is lower than general population if it is lower than one.