Association of hypertension with stroke recurrence may depend on ischaemic stroke subtype

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Why is this study Important?

Although well recognized as the major risk factor for Ischaemic strokes (IS), hypertension (HTN) has not been well considered as a risk factor for recurrence of ischaemic stroke. This study intended to discover whether HTN contributes to the recurrence of certain subtypes of Ischaemic strokes

Who were the participants?

Data was taken from the China National Stroke Registry and one year follow up data for stroke recurrence was calculated. The registry is a nationwide, hospital based registry which enrolls patients within 14 days after stroke onset in 1 of 132 participating hospitals in China. The participating hospitals included 100 tertiary and 32 secondary urban hospitals, selected from 27 provinces and 4 municipalities in Mainland China. The study participants required a WHO stroke definition for stroke diagnosis. Trial of Org 10172 in acute stroke treatment criteria were used to categorize the subtypes of all Ischaemic strokes (TOAST). All stroke patients or their proxies were contacted at 3, 6, and 12 months after incident stroke by telephone

How Ischaemic stroke subtypes were classified and HTN were measured?

According to the TOAST criteria, patients with acute ischaemic stroke were further classified as: Large-artery atherosclerosis (LAA), small-artery occlusion (SAO), cardio-embolism (CE), stroke of other determined pathogenesis, and stroke of undetermined pathogenesis. This subtype of Ischaemic stroke classification was mainly based on the symptoms of patient combined with the results of one or more diagnostic tests. Hypertension was defined when the blood pressure was greater than or equal to 140/90 mmHg on repetitive measurements during the stay at hospital or patient was on anti-hypertensive medication.

What were the results?

11560 patients with Ischaemic stroke, 8409 (72.7%) had hypertension and 2050 (17.7%) experienced a recurrent stroke within 1 year. Recurrence of stroke at 1 year was not different in patients with hypertension as compared to those without (18.0% versus 17.0%; $p<0.21$). The recurrence rates in the SAO group were 14% vs 9.3% ($p<0.010$). Multivariate and Stratified analysis revealed a significant association between HTN and stroke recurrence particularly in small-artery occlusion type (Odds ratio, 1.52; 95% CI, 1.03-2.31), but not in the other subtypes (Large-artery atherosclerosis: odds ratio, 0.99; (95% CI, 0.81-1.21); Cardioembolic: odds ratio, 1.14; (95% CI, 0.75-1.73); other: odds ratio, 0.88; (95% CI, 0.71-1.099). Results also showed that Diabetes mellitus, atrial fibrillation and prior history of stroke were significantly associated recurrence of all stroke subtypes at 1 year.

What were the conclusions?

This study showed a 50% increased risk of stroke recurrence in hypertensive patients due to small vessel occlusion.

What does this mean to our patients?

This data gives the opportunity to explore the determinants of stroke recurrence in hypertensive population. Pakistan has a high prevalence of hypertension. This study highlights the importance of public health measures for the primary prevention from development of Hypertension in our population in order to curtail the risk of incident strokes a well as stroke recurrences. This study also highlights the importance of diabetes mellitus and atrial fibrillation in determining stroke recurrence.

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Recommended Reading

1. Sacco RL, Foulkes MA, Mohr JP, Wolf PA, Hier DB, Price TR. Determinants of early recurrence of cerebral infarction. The Stroke Data Bank. Stroke. 1989; 20: 983-989.
2. Hier DB, Foulkes MA, Swiontoniowski M, Sacco RL, Gorelick PB, Mohr JP, et al. Stroke recurrence within 2 years after ischaemic infarction. Stroke. 1991; 22: 155-161.