

## Multiple Risk Factors Cancel Impact of Atrial Fibrillation on Ischaemic Stroke Risk



The impact of atrial fibrillation on ischaemic stroke risk in elderly patients is eliminated with multiple risk factors, according to an 11 year study in more than 425 000 patients presented at ESC Congress. The findings suggest that stroke prevention in the elderly may need to focus on the concomitant effects of multiple risk factors rather than on a specific risk factor such as atrial fibrillation (AF).

"The incidence of ischaemic stroke increases with greater numbers of cardiovascular risk factors," said principal investigator Dr Yutao Guo, cardiologist at the PLA General Hospital in Beijing, China. "However until now, how atrial fibrillation contributed to the risk of ischaemic stroke with increasing age and multiple cardiovascular risk factors was unclear."

The researchers investigated incident ischaemic stroke rates in relation to age and increasing cardiovascular risk factors (vascular disease, hypertension, diabetes or heart failure), and the incremental impact of AF on these stroke rates. The study population was a 5% random sample of patients without prior ischaemic stroke from a Chinese medical insurance dataset of more than 10 million patients during 2001 to 2012. The rate of ischaemic stroke was calculated in patients with and without AF in relation to age groups (<65, 65-74, ≥75 years old) and increasing risk factors using the CHA2DS2-VASc score.

The study included 425 600 patients who were followed up for 1 864 232 patient-years. Patients were 63.8% male, mean age was 60 years, 880 had AF and 424 720 did not have AF. There were 13 242 (3.1%) ischaemic strokes after 64 834 person-years follow-up. Overall, ischaemic stroke incidence (per 100 person-years) was 0.35 (95% confidence interval [CI] = 0.34-0.35) in the non-AF population and 1.11 (95%CI = 0.84-1.45) in patients with AF ( $p<0.001$ ).

With increasing CHA2DS2-VASc scores, ischaemic stroke incidence per 100 person-years increased in both non-AF and AF populations (both  $p$  value for trend,  $<0.001$ ). The relative risk ratio of ischaemic stroke in the population with CHA2DS2-VASc score  $\geq 2$  was more than doubled compared to those with CHA2DS2-VASc score  $\leq 1$ . However, for patients aged  $\geq 75$ , there was no significant difference in mean CHA2DS2-VASc score between the non-AF and AF population ( $p=0.086$ ).

The non-AF population with  $\geq 2$  additional comorbidities had an increased stroke incidence with age ( $p$  value for trend,  $<0.001$ ). The non-AF population aged  $\geq 75$  years with  $\geq 2$  additional comorbidities had the highest risk for the incident stroke (5.6%), similar to the AF population with a CHA2DS2-VASc score of 5 (4.2%) (Figure 1).

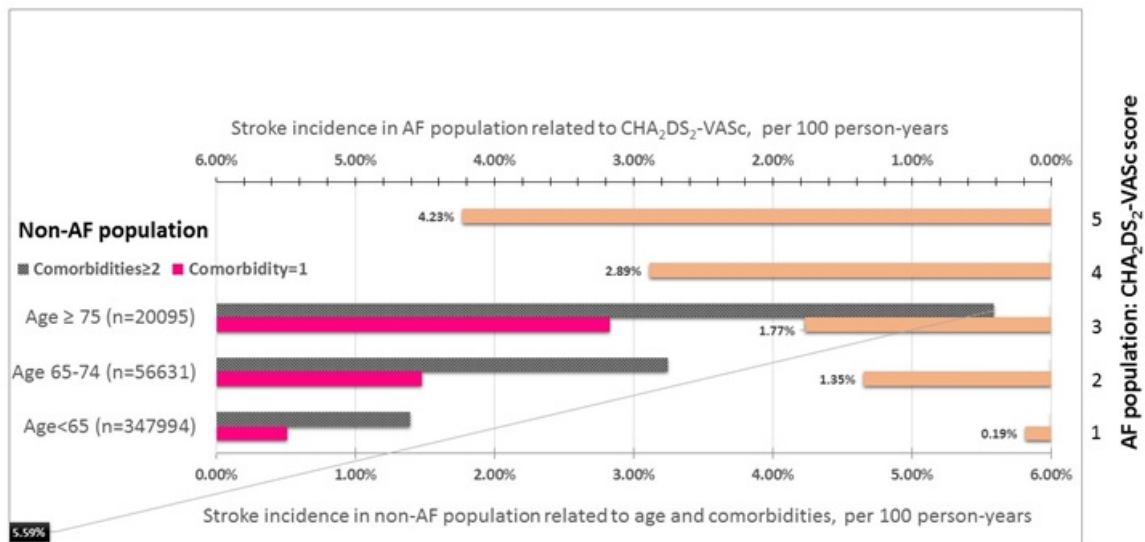
"The non-AF elderly population (age  $\geq 75$  years) had comparable CHA2DS2-VASc scores to the AF population, but a numerically higher stroke incidence," said Dr Guo. "Non-AF patients with multiple additional comorbidities also had high ischaemic stroke rates, especially in the elderly, with the stroke incidence similar to an AF population with CHA2DS2-VASc  $>4$ ."

"The risk of ischaemic stroke is high in elderly patients with multiple risk factors regardless of the presence of AF, and the excess stroke risk attributable to AF is probably minimal in such 'high risk' patients," Dr Guo added.

She continued: "Prevention strategies for stroke need to adapt to changing risk profiles. It will be important to identify risk factors as they emerge and find ways of identifying those at high risk to prevent developing incident strokes in the 'general' population."

Dr Guo concluded: "Patients without AF or prior stroke appear to have a similar or higher stroke risk than patients with AF, particularly if they are elderly and have multiple risk factors. More research is needed on the effect of multiple risk factors on risk of stroke in patients without AF. It may be that stroke prevention measures in the elderly should focus on numbers of risk factors, rather than on a specific risk factor such as AF. A holistic approach to stroke prevention is required."

Figure 1: Stroke incidence in non-AF and AF populations



Notes: The left X and Y axes show stroke incidence in the non-AF population associated with age and comorbidities, while the right X and Y axis show stroke incidence in the AF population classified by CHA<sub>2</sub>DS<sub>2</sub>-VASc scores. Comorbidities were defined as vascular disease (coronary artery disease, peripheral vascular disease), hypertension, diabetes or heart failure.

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Published on : Tue, 1 Sep 2015