

ARRHYTHMIAS

Atrial fibrillation increases risk of NSTEMI

Atrial fibrillation (AF) is not only a known risk factor for stroke and heart failure, but is also associated with an increased risk of incident myocardial infarction (MI). This finding, published in *Circulation*, comes from an analysis of the Atherosclerosis Risk in Communities (ARIC) study by Elsayed Soliman and colleagues.

The analysis involved 14,462 participants in the ARIC study (mean age 54 years, 56% women, 26% African-American). By the end of follow-up (median 21.6 years), AF had been diagnosed in 1,545 participants, and 1,374 had experienced an MI (829 non-ST-segment elevation MI [NSTEMI], 249 ST-segment elevation MI [STEMI], and 296 unclassifiable).

AF was associated with a 63% increased risk of MI of any form (HR 1.63, 95% CI 1.32–2.02). In further analysis, AF was associated with an increased risk of NSTEMI (HR 1.80, 95% CI 1.39–2.31), but not STEMI (HR 0.49, 95% CI 0.18–1.34).

In subgroup analysis, the association between AF and the risk of MI was stronger in women (HR 2.47, 95% CI

1.87–3.25) than in men (HR 1.08, 95% CI 0.78–1.50; $P < 0.0001$ for interaction).

The risk of MI associated with AF was numerically higher in black individuals (HR 2.05, 95% CI 1.32–3.18) than in white individuals (HR 1.52, 95% CI 1.19–1.94), but this interaction was not significant.

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The investigators conclude that if “the association between AF and MI is limited to NSTEMI”, this information might be informative about the mechanism underlying the relationship. In STEMI, a thrombus usually completely occludes the culprit artery, whereas in NSTEMI, the culprit artery usually remains patent with a nonocclusive thrombus. Consequently, direct coronary thromboembolization is unlikely to be the primary mechanism by which AF leads to MI. Instead, the researchers suggest that partial occlusion

of the arteries or increased oxygen demand are more likely to explain the link between AF and MI. Potential mechanisms include an “AF-induced increase in peripheral prothrombotic risk through systemic platelet activation, thrombin generation, endothelial dysfunction, and inflammation”.

In an accompanying editorial in *Circulation*, Rob Vermond and colleagues point out that AF and MI also share many cardiovascular risk factors, including age, hypertension, and diabetes mellitus, so the association might “reflect a common pathway of underlying vascular disease”. Nevertheless, AF is often said to beget AF; we should now be aware that AF also begets MI, and ensure that patients with AF are managed accordingly.

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Original article Soliman, E. Z. *et al.* Atrial fibrillation and risk of ST-segment elevation versus non-ST segment elevation myocardial infarction: the Atherosclerosis Risk in Communities (ARIC) study. *Circulation* doi:10.1161/CIRCULATIONAHA.114.014145