Medication to prevent heart attacks linked with reduced heart attack severity

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Medications prescribed to prevent heart attacks such as statins and aspirin are also associated with reduced heart attack severity, according to research published in *PLOS ONE*. The observational study in nearly 15 000 patients provides further evidence of the benefit of taking these medications.

The findings will be presented at the 27th Great Wall International Congress of Cardiology (GW-ICC), held 13 to 16 October 2016 in Beijing, China. Experts from the European Society of Cardiology (ESC) will present a special programme.

"Cardioprotective medications such as aspirin, statins, and beta-blockers are prescribed to patients who have high risk of a heart attack because they reduce the chance of a first or repeat event," said first author Dr Min Li, a researcher in the Department of Epidemiology and Biostatistics, School of Public Health, Peking University Health Science Centre, Beijing, China.

But she added: "Until now it was not known whether these drugs provided any benefit to patients who develop a heart attack despite taking the medication."

This study assessed the relationship between prior use of four preventive medications (antiplatelet agents such as aspirin, angiotensin converting enzyme inhibitors /angiotensin receptor blockers, statins, and beta-blockers) and in-hospital outcomes in patients with acute coronary

syndromes (ACS). ACS such as myocardial infarction or unstable angina occur when the arteries carrying blood and oxygen to the heart become blocked.

The study included 14 790 patients hospitalised for ACS in 75 hospitals in China who participated in the Clinical Pathways for Acute Coronary Syndromes—Phase 2 (CPACS-2) Study. Among the patients, 7501 had a history of cardiovascular disease (CVD) and were included in the study with a repeat ACS event, while the remainder had no history of CVD and entered the study with a first ACS event.

The researchers assessed the association between prior medication use and in-hospital outcomes including severity of disease (type of ACS, systolic blood pressure 100 beats/minute), arrhythmias, and major adverse cardiovascular events (MACEs, including all deaths, non-fatal myocardial infarction or re-infarction, and non-fatal stroke). The researchers also did a major sub-group analysis based on whether or not patients had prior established CVD to reveal whether the effect of prior medication on clinical outcomes differed between first and repeat events.

Prior use of each medication was significantly associated with less severity of disease, less arrhythmia, and reduced risk of MACEs during hospitalisation, after adjusting for multiple confounding factors. Many of the associations became non-significant after further adjusting for disease severity at presentation. The findings were similar in those with or without a history of CVD.

Dr Li said: "Each of the four preventive medications was associated with a reduction in poor clinical outcomes. The fact that many associations were not significant after we adjusted for disease severity suggests that these drugs may reduce the seriousness of ACS events, which lessens the clinical impact."

Compared to those taking none of the medications, patients taking 1, 2, 3 and 4 medications had a 23%, 33%, 52% and 41% reduced risk of MACEs. The same trend was observed for severity of disease and occurrence of arrhythmias. Similar findings were observed in patients with and without a history of CVD.

Dr Li said: "Our findings suggest that the benefits of these medications may extend beyond preventing ACS. They may also reduce the severity of disease, and in-hospital adverse outcomes, in those who develop an ACS despite taking the drugs. The additional benefits of the four preventive medications were observed in patients with and without a CVD history, reducing the severity of repeat and first events."

She concluded: "We provide further evidence of the preventive benefit of these medications, and urge patients to continue taking them long-term when advised to do so by their doctor. Patients who still develop ACS while using the drugs should not lose confidence but continue to use them because they do help."

Professor Michel Komajda, a past president of the ESC and course director of the ESC programme in China, said: "We know that many heart attack patients stop taking their preventive medications. We need to do more to encourage adherence, and to help patients adopt healthy lifestyle behaviours."

More information: Min Li et al. Impact of Prior Use of Four Preventive Medications on Outcomes in Patients Hospitalized for Acute Coronary Syndrome—Results from CPACS-2 Study, *PLOS ONE* (2016). DOI: 10.1371/journal.pone.0163068

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