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Ambulance administration of anti-clot drug may benefit heart attack patients

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Ambulance administration of the antiplatelet medication ticagrelor to patients with a type of heart attack known as ST segment elevation myocardial infarction (STEMI) is not better than hospital administration, in terms of improving blood flow in blocked arteries before a revascularisation procedure, according to a new study presented at ESC Congress 2014 today.

However, findings from the ATLANTIC (Administration of Ticagrelor in the cath Lab or in the Ambulance for New ST elevation myocardial Infarction to open the Coronary artery) study show that the earlier administration of ticagrelor may prevent stent thrombosis - which is clotting within the tube (stent) that is inserted during revascularisation to keep the artery open.

"Pre-hospital administration of other anti-clotting agents such as fibrinolytics or glycoprotein IIb/IIIa inhibitors has been associated with improved coronary reperfusion and other outcomes in STEMI patients, and we know there is benefit to in-hospital therapy with ticagrelor as compared with clopidogrel in STEMI patients when they are stented," said investigator Gilles Montalescot, M.D., Ph.D, from the ACTION Study Group at the Institut de Cardiologie of Pitié-Salpêtrière Hospital, in Paris, France. "It was not known whether earlier administration of ticagrelor would be safe and possibly more effective."

ATLANTIC was presented as a Hot Line at the congress, with simultaneous publication in the *New England Journal of Medicine*. The

international, multicenter, randomised, double-blind study included 1,862 patients with an ongoing STEMI diagnosed by ambulance personnel based on an electrocardiogram (ECG).

Patients were randomised to receive either ambulance treatment (n=909) or in-hospital (n=953) treatment with ticagrelor or placebo, in addition to aspirin and standard of care.

Randomisation took place in 102 ambulance services. Patients were then transferred to 112 centers in 13 countries to undergo percutaneous coronary intervention (PCI) – a procedure that unblocks the "culprit" artery that has caused the heart attack, usually by placement of a stent.

In the ambulance treatment arm, patients received a loading dose of 180 mg ticagrelor before getting to hospital, and then a matching placebo when they arrived at the hospital. Patients in the other arm received in-ambulance placebo and then a hospital dose of ticagrelor 180 mg.

Subsequently, all patients received 90 mg of ticagrelor twice daily for 30 days, with the recommendation that treatment continue for a year.

The study did not show any difference between the groups for the two primary endpoints of: (i) absence of at least a 70% resolution of ECG abnormalities before PCI (odds ratio [OR] 0.93, p=0632) and (ii) absence of normal blood flow in the heart attack-related artery before PCI (OR 0.97; P=0.8214).

Results for these co-primary endpoints were similar across subgroups, except that patients who did not receive morphine had significantly better ECG normalisation when they received ticagrelor in the ambulance versus in the hospital.

"Co-administration of morphine in the ambulance may have delayed

ticagrelor's onset of action," noted Professor Montalescot. "To what extent this interaction may have affected our results remains unknown at this stage."

For secondary outcomes, there were no significant differences between groups for a composite of death, heart attack, stroke, urgent coronary revascularisation and stent thrombosis. However, definite stent thrombosis was significantly reduced in the ambulance arm, both at 24 hours (0 vs. 0.8%, p=0.0078) and 30 days (0.2% vs. 1.2%, p=0.0225).

"Our study shows that there is no downside to earlier administration of ticagrelor, and it reduces the risk of post-procedure stent thrombosis which is a serious iatrogenic complication. It is also a more practical time point for administration of the drug than in the catheterisation laboratory, where considerable staff and technical demands already exist."

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