

Novel compound may lessen heart attack damage

A novel drug designed to lessen muscle damage from a heart attack has passed initial safety tests at the Duke Clinical Research Institute. Results of the study, available online and to be published in the February 19 issue of the journal *Circulation*, reflect the first time the drug has been tested in humans.

The drug, known as KAI-9803, blocks the activity of an enzyme called delta protein kinase C that triggers cell and tissue death in the aftermath of percutaneous coronary intervention, or PCI. PCI is a set of procedures including balloon angioplasty and stent placement that clear and prop open clogged coronary blood vessels that lead to a heart attack – a process known as reperfusion.

Although the trial (known as DELTA-MI) was not designed to demonstrate the efficacy of KAI-9803, researchers say early data suggest it appears to be a promising compound.

“We’ve needed something like this for a long time,” says Dr. Matthew Roe, a cardiologist at Duke and the lead investigator of the trial.

Roe says many people may not realize that the heart suffers damage at two major points in a heart attack: first, when a blockage in a coronary artery prevents blood and oxygen from getting to the heart, and then again when the patient undergoes PCI and normal blood flow is restored through reperfusion.

“We may not be able to intervene in the first stage of a heart attack, but we think there may be ways to limit damage caused by reperfusion injury,” he says.

Researchers randomized 154 patients who had suffered heart attacks and were eligible for PCI into either one of four dosing levels of KAI-9803 or a placebo. Patients underwent PCI – with physicians injecting the drug directly into their coronary blood vessels during the procedure.

“The goal of the treatment is to flood the heart damaged by the heart attack with the drug immediately before blood flow is restored and then again, immediately afterwards,” says Roe. “We believe that bathing the area with this novel compound may block the damaging cascade of events that are triggered specifically by delta protein kinase C when blood is restored to the heart muscle,” he says.

Earlier studies in animals showed that KAI-9803 lessened damage to the heart muscle and quickly restored its pumping function.

“We designed the DELTA MI trial to find out if KAI-9803 is safe for humans, and we accomplished that goal; we did not see any serious side effects,” says Roe. “We also found, however, many promising signs of beneficial drug activity such as lessened damage to the heart muscle and improvement in electrical conductivity in the heart that corresponded to restoration of blood flow to the heart muscle. As a result, we feel this drug has the potential to be helpful in reducing the impact of a heart attack in humans.”

Source: Duke University Medical Center

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