Transferring doctors to heart attack patients improves outcomes

April 26 2011

In a large, traffic-congested city in China, severe heart attack patients received treatment faster and had better long-term results when interventional physicians were taken to them, according to a study in the American Heart Association journal *Circulation: Cardiovascular Quality and Outcomes*.

The REVERSE-STEMI study involved 334 patients who had suffered a ST elevation myocardial infarction (STEMI), a severe form of heart attack.

The patients were initially brought to one of five hospitals, all in Shanghai, China, that didn't have specialists who could perform primary percutaneous coronary infusion (PPCI) or primary angioplasty, but had cardiac catheterization laboratories.

During PPCI, the recommended treatment for acute STEMI patients, a balloon on the end of a long tube, or catheter, is guided through one of a patient's arteries to the blockage causing the heart attack. Then, the balloon is inflated to place a stent to open the artery.

In the study, about half the patients were transferred, as is routine, to a sixth Shanghai hospital capable of performing PPCI. The other patients were subject to an "interventionalist-transfer strategy," in which the patients stayed at the hospital where their condition was diagnosed and an interventional cardiologist was dispatched from a PPCI-capable hospital.

The study tracked "door-to-balloon time," the period between a STEMI patient's arrival at a hospital to when the balloon was inflated. The goal is a door-to-balloon time of 90 minutes or less.

About 21 percent of the patients in the interventionalist-transfer group had PPCI performed within the 90-minute time frame, compared with just 7.7 percent of those in the patient-transfer group, the researchers found.

The interventionalist-transfer strategy is feasible and effective in reducing door-to-balloon time, said Qi Zhang, author of the study and a cardiologist at Ruijin Hospital in Shanghai, China.

A year later, nearly 85 percent of the patients whose specialist was taken to them survived and had not experienced any other major cardiac events, such as another heart attack, compared to nearly 75 percent of the patient transfer group. Also a year later, the left ventricular ejection fraction of patients in the interventionalist-transfer group (60.1 percent) was significantly higher than that of the patient-transfer group (56.9 percent). Left ventricular ejection fraction is a measure of the heart's pumping ability.

Traffic increased the door-to-balloon times for transferred patients by delaying the arrival of the ambulance at the first hospital and then delaying the patient's transfer to the second hospital. The risk of cardiac complications also increased during patient transfer. The average transfer distance was 17.5 kilometers (almost 11 miles).

The interventionalist-transfer strategy could be an important tool in metropolitan areas of China or elsewhere if resources such as ambulances and emergency staff are in short supply, leading to delays in transferring patients, researchers said. Until emergency infrastructure in some cities can be improved, "we believe this strategy is a good interim

option," Zhang said.

Provided by American Heart Association