Repeated inflations of a blood pressure cuff limits tissue damage in patients with AMI

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Repeated lack of oxygen for short periods of time in a distant organ by stopping blood flow, can protect another organ (e.g. the heart), during a subsequent tissue damaging period due to oxygen deficiency. The principle can be applied before predictable oxygen deficiency during heart surgery. However, in most patients heart attacks are unpredictable. In this randomized single-blinded trial, the investigators tried to determine whether remote ischemic conditioning during evolving myocardial infarction could have a protective effect and decrease heart tissue damage in patients later undergoing acute balloon dilatation.

A total of 333 Danish patients were assigned to receive remote conditioning or no conditioning during ambulance transportation to the hospital for acute balloon dilatation. In the group receiving remote conditioning a blood pressure cuff was placed on the upper arm and inflated to 200 mmHg for 5 minutes to stop blood supply to the arm, and then released for another 5 minutes to restore blood flow. The procedure was repeated 4 times during transportation.

On average the amount of heart tissue saved was 30% higher in patients receiving remote conditioning compared to those receiving standard care. This increased to 50% among those with the highest amount of heart tissue threatened by coronary occlusion. Limitation of tissue damage resulted in improved heart function during hospitalization.

The underlying mechanisms are thought to be activation of protective systems in the heart. This induces resistance to tissue damage during lack

of oxygen in particular when opening the occluded artery by balloon dilatation. The investigators characterize the treatment as inexpensive and promising, and predict that it will have widespread potential for the treatment of not only heart attack but also other diseases such as stroke. However, larger studies are needed to establish the precise benefits in patients. It also needs to be clarified whether the new treatment can reduce mortality and development of heart failure following a heart attack.

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