



## Do we really need aspirin loading for STEMI?

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### Background:

Ischemic postconditioning (PostC), repetitive cycles of re-occlusion and reperfusion of the infarct related artery immediately after reperfusion has been shown to limit myocardial infarct size in various animal models. Yet, translating the model into the clinical setting was disappointing, several clinical trials showing neutral effect. The current STEMI guidelines recommend urgent aspirin loading, while in the animal models, aspirin was not administered. Aspirin blocks cyclooxygenase-2 that involves in myocardial protection. We hypothesized that aspirin loading could explain the differences between the pre-clinical and clinical studies.

### Methods:

Male Sprague Dawley rats were subjected to 30min coronary artery ligation. At 25 min of ischemia animals received intravenous aspirin (20mg/kg) or vehicle. Upon reperfusion half of the rats were randomized to PostC (3 cycles of 10sec re-occlusion/10sec reperfusion). After 4h reperfusion rats were euthanized. Area at risk was assessed by blue dye and infarct size by 2,3,5-triphenyl-tetrazolium-chloride (TTC). Results: Body weight and the size of the ischemic area at risk were comparable among groups. Infarct size expressed as a percentage of the ischemic area at risk was significantly smaller in the PostC group ( $13.9\pm 0.4\%$ ;  $p<0.001$ ) compared to the control group ( $31.0\pm 2.2\%$ ). Aspirin alone had no effect on infarct size ( $29.0\pm 2.6\%$ ). Yet, aspirin completely blocked the protective effect of PostC ( $33.3\pm 1.1\%$ ).

### Conclusions:

Aspirin, administered before reperfusion blocks the infarct size limiting effects of PostC in the rat. It is plausible that aspirin loading blocks the infarct size limiting effects of PostC and other interventions (statins for example) in the clinical setting. Searching the literature, there is no clinical study supporting the use of aspirin loading in patients with STEMI.

Keywords—Aspirin, Infarct size; Postconditioning; STEMI.

### Biography

Yochai Birnbaum has completed his MD in 1982 at the Hebrew University, Jerusalem, Israel. He is a Professor of Medicine at Baylor College of Medicine, Houston, Texas. He has published 392 papers in reputed journals, and has been serving as an editorial board member of several journals. He is the Editor in Chief of Cardiovascular Drugs and Therapy.

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