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TIME COURSE OF URINARY ISOPROSTANE EXCRETION AND EFFECT OF ATRIAL NATRIURETIC PEPTIDE ADMINISTRATION ON OXIDATIVE STRESS DURING ACUTE PHASE OF MYOCARDIAL INFARCTION

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Background: Previous studies have suggested that oxidative stress induced by reactive oxygen species participate in reperfusion injury after coronary intervention for acute myocardial infarction (MI) and administration of atrial natriuretic peptide (ANP) during acute phase of MI prevents left ventricular (LV) remodeling on chronic phase . We investigated that time course of isoprostane, a marker of oxidative stress, and effect of ANP administration on oxidative stress during acute phase of MI.

Methods: Twenty six patients with acute MI were randomly divided into ANP (n=7) or non-ANP (n=19) group. For ANP group, infusion of low dose (0.016±0.01 μg/kg/min) human ANP was started immediately after percutaneous coronary intervention (PCI) and continued during acute phase of MI (3-5 days). Urine samples were collected from both groups at day 0, day 1, day 3 and day 7 after PCI. Urinary isoprostane concentration (ng/ml) was measured by enzyme immune assay and urinary isoprostane excretion (ng/day) was calculated by urine volume of each day.

Results: Urinary isoprostane excretion was significantly ($P< 0.01$) increased on day 0 and day 1 compared with day 7 (+ 121% and + 71%, respectively). Administration of ANP significantly ($P<0.05$) reduced mean isoprostane excretion of ANP group compared with non-ANP group (-25%) without affecting hemodynamic parameters.

Conclusions: Urinary isoprostane excretion was rapidly increased after PCI in patients with acute MI and was reduced by ANP administration. ANP-induced reduction of oxidative stress may have contributed in part of beneficial effects of ANP on patients with MI observed in previous studies.