EFFECT OF CANDESARTAN WITH PIOGLITAZONE ON CORONARY ENDOTHELIAL FUNCTION AND VASCULAR INFLAMMATION IN PORCINE CORONARY ARTERIES IMPLANTED WITH SIROLIMUS-ELUTING STENTS

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Authors: Tomotaka Dohi, Katsumi Miyauchi, Ryo Tsuruta, Naozumi Kubota, Takatoshi Kasai, Takumi Iesaki, Hiroyuki Daida, Juntendo University, Department of Cardiology, Tokyo, Japan

Background: Late stent thrombosis is a major clinical problem related to endothelial dysfunction and inflammation after sirolimus-eluting stents (SES) implantation. However, therapeutic strategies to overcome these disorders are unclear.

Methods and Results: Twenty-one pigs were randomized to control, candesartan (CAN) and candesartan plus pioglitazone (CAN+PIO) groups. Drugs were administered orally for 7 days before implantation until the time of euthanasia. Forty-two SES was deployed in porcine coronary arteries. The early inflammatory cell adhesion that was present on coronary was evaluated using scanning electron microscopy at 3 days and was found to be significantly suppressed in the CAN+PIO group than in the CAN group (p<0.05). Immunohistochemistry at 3 days showed that activated TNF-α expression in the control SES edges was significantly less in the CAN and CAN+PIO groups whereas eNOS-positive areas recovered in the CAN and CAN+PIO groups (p<0.05, respectively). Bradykinin-induced endothelium-dependent relaxation at the distal edge of SES evaluated by organ chambers was reduced compared with intact sites in control coronaries at 28 days (p<0.05). Endothelial dysfunction was reversed by CAN and this beneficial effect was enhanced more obvious in the CAN+PIO (p<0.05, respectively).

Conclusions: Candesartan protected against vascular inflammation and restored endothelial dysfunction after SES implantation and pioglitazone added further beneficial effects. Administering these drugs before SES implantation might work as vascular protection.