Metabolic Aspects and Mechanisms

9.21 Skin Fibroblasts Expression of PPAR-Gamma, At1 and At2 Receptors In Patients with Hypertension and Metabolic Syndrome: Preliminary

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Introduction. The family of peroxisome proliferator activated receptors (PPARs) includes nuclear receptors involved in several metabolic pathways. Among these receptors, the PPAR gamma seems to have a major role in molecular mechanisms related to hypertension and metabolic syndrome (MS). Since experimental and clinical studies have showed that the presence of MS is associated with an increased interstitial fibrosis of several tissues.

Aim. To evaluate the constitutive expression of PPAR gamma, type 1 and 2 angiotensin II receptors (AT1, AT2) in skin fibroblasts of hypertensive patients with and without MS.

Methods. We enrolled 12 not smoker patients (mean age 43 ± 6 years, 8 men) with essential hypertension never treated with antihypertensive drugs, and without ultrasonographic evidence of left ventricular and carotid damage. Among these, 5 had metabolic syndrome (MS+, diagnosed with AHA 2005 criteria). All patients underwent skin biopsy. The fibroblast cultures were obtained by incubation of dermal specimens with bovine fetal serum and penicillin in sterile ground; the incubation (temperature 37°C , atmosphere humidified to 90%) lasted 28 days. The AT1 and AT2 receptors and PPAR gamma expression study was performed by RT-PCR, using available probes and primers based on TaqMan technology and using beta-actina gene as housekeeping. The genic expression calculation was performed by Gene Express Software.

Results. None of skin fibroblasts expressed AT2 receptors. Genic expression of AT1 receptors was significantly higher ($p < 0.05$) in MS hypertensive patients compared to MS+ hypertensive patients (0.85 ± 0.19 and 0.32 ± 0.19 , respectively), whereas genic expression of PPAR gamma receptors was higher in MS hypertensive patients than in MS- (MS+ 18.4 ± 3.39 vs MS- 2.62 ± 0.10 , $p < 0.05$).

Conclusions. In skin fibroblasts of hypertensive patients AT1 receptors genic expression shows an opposite trend compared to genic expression of PPAR gamma receptors, as demonstrated before in other cellular models. These results have to be confirmed using a greater number of patients and evaluating protein expression instead of gene expression to afterwards better define the relationship between these receptors and the collagen metabolism.