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## Vessels and Endothelium

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### 12.15 Effect of Anti-Hypertensive Treatment on Circulating Endothelial Progenitor Cells in Patients with Mild Essential Hypertension

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**Introduction.** It has been reported that circulating endothelial progenitor cells (EPC) number reflects the endogenous vascular repair ability with the EPCs pool declining in presence of cardiovascular risk factors. However, their relationship with hypertension and the effect of anti-hypertensive treatment remains unclear.

**Methods.** Fifteen patients with mild essential hypertension were randomized to receive barnidipine (BD dose up to 20 mg) or hydrochlorothiazide (HCT dose up to 25 mg). Circulating EPC were isolated from peripheral blood at baseline and after 3 months of treatment. Mononuclear cells (MNC) were cultured with endothelial basal medium supplemented with EGM Single Quots. Fluorescent chemical detection of EPCs was performed on attached MNC after 7 days. EPC were identified by positive double staining for both FITC-labelled Ulex europaeus agglutinin I and Dil-labelled acetylated low density lipoprotein. EPC were counted with an inverted fluorescent microscope (cell number/ $10^7$  plated cells per 1.17 mm<sup>2</sup> of area).

**Results.** After 3 months of treatment systolic and diastolic blood pressure (BP) was reduced from 143.13±3.0 to 130.20±1.6 and from 94.93±1.8 to 82.60±2.0 mm Hg, respectively ( $p<0.001$ ). No difference was observed between drugs. An increase of EPC number was observed after 3 months of anti-hypertensive treatment (39.95±5.8 vs. 81.15±26,  $p<0.05$ ). EPC increased in both groups treated with BD or HCT; however, the increase was of borderline statistical significance when the treatment groups were evaluated separately ( $p=0.09$  and 0.053, respectively). No statistically significant correlation was observed between EPC number and clinical or 24-hour BP values.

**Conclusions.** Our data suggest that antihypertensive treatment increases the number of EPC. However, we were not able to observe a different effect of BD and HCT on EPC, suggesting that changes of blood pressure values per se may play a major role in modulating EPC number and, possibly, vascular damage.