Cpg methylation of 11beta-hydroxysteroid dehydrogenase type2 promoter is increased in adult esential hypertensives

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We reported that 15% of essential hypertensives may suffer from impairment of the enzyme 11beta-hydroxysteroid-dehydrogenase type 2 (11BHSD2). 11BHSD2 activity and expression can be affected by mutations, polymorphisms, and lately, epigenetic modifications. **Aim**: To evaluate the HSD11B2 promoter methylation in adults and pediatric essential hypertensives (HT). **Material and Methods**: We recruited 64 patients, grouped in 16 HT and 16 Normotensive (NT) adults; 16 HT and 16 NT pediatrics. We measured serum aldosterone, plasma renin activity (PRA), cortisol (F), cortisone (E) and free urinary cortisol metabolites (THF, aTHF, and THE). PBMC bisulfite–treated DNA was used to perform the methylation-specific PCR (MS-PCR) and calculated the methylation index in HSD11B2 promoter. **Results**: HT adults have higher methylation index compared with NT adults (0.154±0.031 vs. 0.072±0.011, p<0.05). HT and NT children have low and similar methylation (0.021±0.005 vs. 0.052±0.008, p NS). Methylation in HT adults was higher than either HT or NT children (p<0.05), and negatively associated with lower urinary cortisone levels. **Conclusions**: CpG methylation of HSD11B2 promoter is increased in adult esential hypertensives compared to NT adults and either HT/NT children. A high cortisol/cortisone ratio is in agreement with previously reported low expression of renal HSD11B2. Further studies would support the HSD11B2 methylation index in PBMC as potential molecular biomarker of mineralocorticoid activity and essential hypertension.

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