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The relationship between MTHFR C677T gene polymorphism and essential hypertension in a sample of an Algerian population of the Oran city

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Background: Many studies have investigated the role of 5, 10-methylenetetrahydrofolate reductase(MTHFR) C677T gene polymorphism in essential hypertension (EH), but with conflicting results.

Aim: To determine the eventual association between 5,10-methylenetetrahydrofolate reductase(MTHFR) C677T gene polymorphism and hypertension in a sample of Algerian population from the Oran city.

Methods: A case-control study has been performed in 154 subjects including 82 hypertensives defined as subjects with elevated systolic blood pressure SBD \geq 140mmHg and or sustained diastolic blood pressure DBP \geq 90mmHg, and 72 normotensive subjects. Polymerase chain reaction (PCR) combined with restrictive fragment length polymorphism (RFLP) was used to detect the MTHFR C677T variant.

Results: We observe no significant differences between allelic and genotypic frequencies between cases and controls for C677T polymorphism (OR=1.51, 95% CI= 0.89-2.56, P=0.13). Analyses adjusted for age, sex and body mass index improved the association level, though the association was still not significant (30% vs. 22%, OR=1.75, 95% CI= 0.95-3.24, P=0.07).

Conclusion: This work showed that genetic polymorphism related to the MTHFR gene (C677T) is not associated with the risk of hypertension in this sample of Algerian population. Larger case- control samples are required to clearly assess the role of this genetic variant in EH.

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Application of CAVI in idiopathic pulmonary arterial hypertension

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Aim: The purpose of the study was to describe structural and functional alterations within the vessel wall of systemic circulation arteries in patients with idiopathic PAH (IPAH) and PAH associated with congenital heart disease (PAH-CHD) using cardio-ankle vascular index (CAVI).

Methodology: The study included 45 patients (82,2%female) with IPAH (group 1), 40 patients (77,5% female) with PAH-CHD (group 2), 32 (63,5% female) patients with arterial hypertension (AH) and 35 (80,0% female) healthy patients (control group). CAVI was used to estimate arterial stiffness, right heart catheterization was done to confirm hemodynamic variant of pulmonary hypertension. The mean age of the patients was 39.3 ± 1.0 years.

Findings: Right side CAVI was equally high in IPAH and AH patients (7.41 ± 0.20 vs 7.33 ± 0.19 ; $p > 0.05$), at the same time in IPAH CAVI was 18% higher in comparison with controls. Right side CAVI in group 3 was significantly higher than in group 2 (7.33 ± 0.19 vs 6.39 ± 0.19 , $p < 0.05$) and controls (7.33 ± 0.19 vs 6.07 ± 0.14 , $p = 0.001$). Left side CAVI in IPAH patients and AH patients was 7.52 ± 0.20 and 7.14 ± 0.15 ($p > 0.05$) and in IPAH group it was 18% than in controls. Left side CAVI in AH patients was 7.14 ± 0.15 , that was significantly higher than in controls 6.18 ± 0.14 ($p < 0.001$) and didn't differ with PAH-CHD patients (7.14 ± 0.15 vs 6.59 ± 0.24 , $p > 0.05$). In our study CAVI 7.0 was determined as a cut-off value. CAVI > 7.0 was found in 60% of patients with IPAH and in 64% of the patients in patients with AH, while in PAH-CHD patients it was observed in every 4 patient and in control group – in every 8 patients.

Conclusion & Significance: Our study found structural and functional alterations within the vessel wall of systemic circulation arteries in patients with IPAH.

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Early clinical manifestation of type 5 cardio-renal syndrome in patients with type 2 diabetes and hypertension

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Introduction: The cardio-renal syndrome (SCR) type 5 is characterized by the simultaneous presence of cardiac and renal dysfunction associated to acute or chronic systemic disorders. The detection in early stages is difficult because of the complexity pathophysiological in addition that the majority of patients are often oligo-symptomatic.

Methods: Study longitudinal, observational and cross-sectional study, conducted in a community in the state of Mexico. We studied patients of 82 years with diabetes and/or hypertension ≥ 5 years of evolution without kidney or heart disease is somatometrics and biochemical parameters were analyzed. The results are presented as simple frequencies and proportions for categorical variables, and as mean \pm standard deviation for scalar variables. The correlations were analyzed using the Student t-test (95% CI).

Results: 30 patients (mean age 57.3 [33-82] years) were studied, 18 were women (60%), 26 patients had a diagnosis of DM/Hypertension, 20 patients presented some type of dyslipidemia. 15 patients (50%) had higher levels of HbA1c above the therapeutic goal ($\leq 6.5\%$), 9 patients (30%) fulfilled the therapeutic goal of glucose (90-130 mg/dL). The HbA1c level declined 1.93% of the total population and increased 3.92% in patients with DM/Hypertension. The plasma levels of creatinine levels were 0.87 ± 0.20 mg/dL with an increase of 10.34%. The GFR estimated average was 94.06 ± 21.80 mL/min/1.21m² showing a decrease of 11.15%. The average RR interval was significantly shorter (845 ± 98.82 ms) and corrected QT interval (QTc) longer (428 ± 24.34 ms) in patients with DM. The estimated GFR showed a progressive decrease in spite of the reduction of HbA1c ($p=0.03$). The estimated GFR showed a directly proportional relationship to the QTc interval showing an increase for both variables of 14.03% and 10.61%, respectively ($p=0.03$).

Conclusions: Early clinical manifestations are nonspecific in these diseases, however, in our study group renal alterations were more frequent, and the progressive renal failure in our population was independent to the adequate metabolic control, being able to infer that the kidney damage precedes the heart damage in patients with diabetes and/or hypertension.

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