

World Congress on

Human Genetics

November 07- 08, 2016 Barcelona, Spain

Effect of *ACE* genotype on brain bioactivity in vascular dementia

Ivan Tellado¹, Juan Carlos Carril^{1,2}, Carmen Fraile¹ and Ramon Cacabelos^{1,2}¹EuroEspes Biomedical Research Center, Spain²Camilo Jose Cela University, Spain

The *ACE* gene (17q23) encodes the angiotensin I-converting enzyme, which is a component of the renin-angiotensin system (RAS). RAS participates in the control of electrolytic balance and blood pressure. *ACE* displays a polymorphism I/D expressed by insertion (I) or deletion (D) of an Alu sequence of 287 base pairs in intron 16. There are 3 possible genotypes in the general population: DD, ID and II. The allele D is associated with higher risk for heart attack, arterial hypertension, diabetes mellitus, stroke and cerebrovascular diseases such as vascular dementia (VD). We applied EEG to 61 VD patients divided in three groups according to their vascular risk associated with *ACE* genotype: 27 DD patients, 24 ID patients and 10 II patients. Functional images of spectral density were computed for six frequency bands: Delta (1.5-4 Hz), Theta (4-8 Hz), Alpha1 (8-10 Hz), Alpha2 (10-13 Hz), Beta1 (13-21 Hz) and Beta2 (21-30 Hz). Further analyses were performed using the eLORETA software. We found that D carriers show a tendency to decrease the Beta2 oscillations in the right frontal lobe respect to non-carriers. The best match was located in the inferior frontal gyrus particularly in Brodmann area 47 (BA47). In addition, an increase in Beta2 connectivity between centro-occipital regions in right hemisphere (Cz-O2) nearly reached statistical significance. Our results suggest that D carriers have less cortical activity in frontal lobe. The frontal hypoactivity likely reflects the vascular damage accumulated over the life in these individuals. The C-O hyperconnectivity observed in D carriers may be related to the lack of significant difference on cognitive status between D carriers and non-carriers.

Biography

Ivan Tellado has completed his Bachelor in Biological Science from University of A Coruña, Spain in 1998. He is the Director of Digital Diagnosis at the EuroEspes Biomedical Research Center. He has published more than 15 papers in reputed scientific journals. His scientific research has been focused on the study of the genotype-phenotype relationship on brain, in particular in age and genotype-related changes on brain activity networks.

diagnosticodigital@euroespes.com

Notes: