ORAL PRESENTATIONS

SCIENTIFIC SESSION 19: WHAT DRIVES GENETIC PREDISPOSITION TO HYPERTENSION?

O67 URINARY PROTEOMIC PROFILING REVEALS MOLECULAR CUES UNDERLYING HIGHER HYPERTENSION SUSCEPTIBILITY IN BLACKS THAN WHITES

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Background and Objective: Compared with Whites, Blacks are more prone to hypertension and salt-sensitivity. The objective was to investigate whether sequenced urinary peptide fragments derived from proteins with a key role in cardiovascular or renal structure or function have different levels in sub-Saharan Blacks compared with Whites.

Methods: This individual-participant meta-analysis included individuals enrolled in African-PREDICT (476 Blacks and 483 Whites), FLEMENGHO (720 Whites), PROVALID-Austria (467 Whites) and UPRIGHT-HTM (106 Nigerian Blacks and 61 Polish and Slovenian Whites). Urinary peptides were quantified by capillary electrophoresis combined with mass spectrometry.

Results: Among 2313 participants (49.7% women), median age was 40.9 years. Of 513 urinary peptides with 70% prevalence, 300 had Bonferroni-corrected significantly different levels among Black and White South Africans sharing the same environment. Analyses contrasting 582 Blacks vs 1731 Whites, sub-Saharan Blacks (582) vs European Whites (1248) replicated the findings. Combining these results with information from public databases, we identified COL4A1, COL4A2, CD99, FAT1, FGA, FXYD2, MGP, MYOCD, PCDH7, PROC, and UMOD as most likely candidates underlying the different susceptibility to hypertension and salt sensitivity between Blacks and Whites. The most relevant enriched pathways were related to hemostasis, platelet activity, collagens and biology of the extracellular matrix, and protein digestion and absorption. Disease Ontology terms comprised small-vessel disease and coronary and macrovascular atherosclerotic disease.

Conclusions: MGP and MYOCD being involved in cardiovascular function, FGA in clot formation, FYXD2 and UMOD in salt homeostasis, and COL4A1 and COL4A2 as major component of the glomerular basement membrane are proteins deserving further exploration in molecular and human studies as potential targets for intervention to reduce the excess hypertension risk and associated complications in Blacks.

Keywords: blood pressure, cardiovascular disease, hypertension, population science, salt sensitive, urinary proteome

O68 ATRIAL SEPTAL ANEURYSM IN IDENTICALS TWINS

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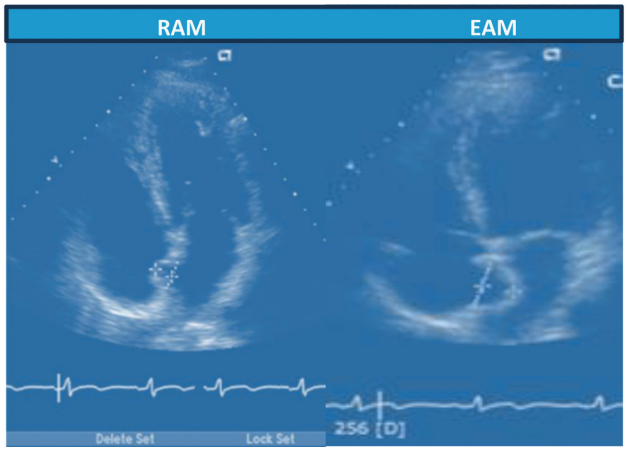
Introduction: Interatrial septal aneurysm (ISA) is a dilatation of saccular tissue, generally located in the foramen ovale area, which moves freely and protrudes into the right or left atrium, or even both. Today it is estimated that 85% of children born with congenital heart disease survive to adulthood, however, we have not found cases of ISA reported in identical twins in adulthood.

Methods: Two 55-year-old female patients, identical twins EAM and RAM, body surface area 1,899 and 1,826 m2 respectively, consulted for elevated blood pressure (160/90 and 160/95 mmHg respectively). One of them reported headache accompanied by joint pain and mild dyspnea, the other patient reported palpitations and mild dizziness. His parents are hypertensive. They were hospitalized at 5 months of age due to viral meningitis, with no further consequences. Antihypertensive treatment, laboratory, stress test, and echocardiogram/Doppler were prescribed.

Results: Laboratory tests were found to be normal. The stress test (protocol: Bruce) was reported to be negative for induced myocardial ischemia. Echocardiography revealed ISA in both patients.

Conclusions: Twins, particularly monochorionic twins, are at increased risk of congenital anomalies compared with singleton pregnancies, and the risk of cerebrovascular disease (CVD) or transient ischemic attack (TIA) in patients with ISA is 6.7% in adult patients. ISA has been associated with acquired cardiac diseases, such as valvular heart disease, cardiomyopathies, pulmonary and systemic hypertension, ischemic heart disease, arrhythmias, and thrombus formation. More recently, an association with embolic cerebrovascular pathology has been observed, both in TIA and CVD. For this reason, we consider that in adult patients who are identical twins when one of them is found with ISA, an evaluation should be carried out in their twin for its appropriate treatment and thus avoid future cardiovascular complications derived from this anomaly. According to our reviews, this is the first case of ISA in identical twins. New observations on ISA in twins are needed.



O69 THE REGULATORY ROLE OF CIRCULAR RNAS IN RESPONSE TO RAAS INHIBITORS

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Circular RNAs (circRNAs) are a class of non-coding RNA that may play an important role in disease progression and diagnosis. This study aimed to investigate the role of renal circRNAs in hypertension and to identify circRNAs pathways explaining chronic reset in blood pressure. Two groups of young spontaneously hypertensive rats (SHR) were used: rats treated with or without losartan (RAAS inhibitor, n = 18 in each group). Through established circRNA identification and quantification tools, we identified five significant circular RNA candidates ($P < 0.05$), each aligning with differentially expressed and biologically significant miRNA. Furthermore, these candidate circRNAs aligned with expression pathways found in both treatment and control groups. In conclusion, this study identified several circRNAs which may play an important role in blood pressure regulation. It may advance our understanding of circRNAs in mediating losartan-induced blood pressure reduction. Future studies on validation, expression networking and methylome analysis may shed light on these circRNAs' significance and identify potential therapeutic biomarkers.

O70 INVOLVEMENT OF MICRORNAS-146A-5P, -155-5P, AND -29B-5P IN CARDIAC REMODELLING AND DYSFUNCTION IN SPONTANEOUSLY HYPERTENSIVE RATS

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