Meta-analyses of Epigenetics Risk Factors for Prevention of Hypertension: Angiotensinogen human gene variations across different Race-Ethnicity Groups

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Purpose

1. Understand gene mutation variations in relation to hypertension for underlying population health issues of various race-ethnicity groups in the world.
2. Discuss potential epigenetics and lifestyle prevention strategies for hypertension.

Introduction

1. Hypertension is a major risk factor for heart diseases, stroke, and kidney diseases. Previous research suggests an association between Angiotensinogen (AGT) single nucleotide polymorphisms M235T variations and hypertension.
2. Life style risk factors were associated with increased risk for hypertension.
3. No meta-analysis concluded the association for AGT M235T with hypertension for different population groups.
4. Purpose of this study was to identify the association of AGT M235T gene variations and hypertension for various race-ethnicity groups and the associated risk factors for the prevention of hypertension.

Methodology and Result

1. Preliminary analyses included 7607 cases and 9673 controls associating AGT M235T with hypertension from 30 case-control studies published within the last 18 years.
2. Gene mutation variations (MT and TT subtypes) in Asians were higher (37.1-51.2%) than Caucasians (24.2-49.3%) in the world, for control and case groups.
3. For validation, pollution indicators were checked and shown worse in Asia than other countries in recent years.
4. For lifestyle related pooled for meta-analyses: (studies, cases, controls, RR, 95% Confidence Interval)
   ★ Smoking (11 studies, 2155 cases, 3518 controls, RR=1.14, 95% CI=0.93-1.40)
   ★ Alcohol intake (5 studies, 1076 cases, 2280 controls, RR=0.82, CI=0.60-1.13)
   ★ Physical inactivity (3 studies, 470 cases, 2021 controls, RR=0.97, CI=0.86-1.09)
5. Association of AGT M235T gene variations, genotype MM (16.9% cases, 19.1% controls) was protective against hypertension for all populations combined (RR=0.83, CI=0.73-0.94, p=0.0026).

Conclusion

★ ★ ★ Future research is needed to investigate the interactions between epigenetic risk factors and AGT gene variations for the population health across the world in the prevention of hypertension. ★ ★ ★