抽菸、Myeloperoxidase 及 CYP1A1 基因多形性與高血壓之相關性

The Relationship among Cigarette Smoking, Genetic Polymorphisms of Myeloperoxidase and CYP1A1 and Hypertension

中文摘要

爲瞭解抽菸、骨髓過氧化酵素(myeloperoxidase, MPO)及細胞色素酵素(CYP1A1)基因多形性對罹患高血壓之相關性，係選擇臺北市立忠孝醫院之門診以及參與臺北醫學大學附設醫院和萬芳醫院健康檢查之民眾(其中排除患有癌症者)作爲本研究之研究對象。經由受過訓練的訪視員進行問卷訪視，問卷內容包括人口學資料(包括性別、年齡、血型、婚姻狀況、教育程度、籍貫、職業史、居住史)、生活習慣(包括抽菸、喝酒、喝茶、喝咖啡)、飲食習慣、身體活動量、家族疾病史等。並採集受檢者禁食 12 小時的血液樣本，萃取 DNA 進行基因多形性分析。MPO 與 CYP1A1 基因多形性分析乃藉由聚合酵素連鎖反應增幅特定基因片段，以限制片段長度多形性的實驗來判定基因變異位置，最後利用 3%凝膠電泳分析以確認其基因型，並委外進行核酸定序以確定實驗效度。檢視正常血壓者基因型分布頻率，MPO G-463A 基因型 GG 爲 71.9% GA 爲 25.6% AA 爲 2.5%。CYP1A1 m1 (T6235C)基因型 TT 爲 38.6% TC 爲 45.5% CC 爲 15.9%。基因型分布頻率觀察值與期望值無顯著不同，皆符合哈溫平衡。

本研究發現年齡較高、教育程度較低及父母親爲閔南人者，罹患高血壓的危險性比年齡較輕、教育程度較高及父母親爲其他氏族者顯著增加。抽菸每天 0.65 包數以上者，高血壓之危險性顯著高於每天 0.65 包數以下者。有或偶爾喝茶、喝咖啡會降低高血壓的危險性。生化值以正常血壓人之三分位分層分析，發現身體質量指數、三酸甘油脂或空腹血糖值異常者其高血壓之危險性顯著增加。MPO G-463A 基因型變異(GA/AA)會顯著增加高血壓的危險性，但 CYP1A1 m1 (T6235C)基因多形性對誘發高血壓之危險性並無顯著相關。

英文摘要

This study was conducted to explore the relationship among cigarette smoking, genetic polymorphisms of myeloperoxidase (MPO) and cytochrome p450 1A1 (CYP 1A1), and hypertension. All study subjects (excluding cancer patients) were recruited including outpatients at the Taipei City Hospital, Zhongxiao Branch, and those who received senior citizen health examination at Taipei Medical University Hospital and those who received adult health examination at Taipei Municipal WanFang Hospital between September 2005 and December 2006. Well-trained personnel described the purpose of this study for study subjects and got their informed consent and then carried out standardized personal interviews based on a structured questionnaire. Information obtained included sociodemographic characteristics, lifestyle (cigarette

smoking, and consumption habits of alcohol and other beverages), occupational and environmental exposure to possible carcinogens, and personal and familial disease history. 10-mL 12 hours fasting blood sample was drawn to analyze the gene variants in the MPO and CYP 1A1 polymorphism by utilizing the polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) assay.
The frequencies of MPO G-463A polymorphism were GG (71.8%), GA (25.6%) and AA (2.6%) and of CYP1A1 MspI polymorphism were TT (38.6%), TC (45.5%) and CC (15.9%). The genotypes distribution of these two genes in control group fitted the Hardy-Weinberg equilibrium.
Overall, the older, the lower educational level and mother or father is Fukien Taiwanese carry higher hypertension risk than younger, higher educational level and mother or father is other ethnicity, respectively. Subjects smoked cigarette over 0.65 package-per-days had significantly higher risk of hypertension than those who smoked less than 0.65 package-per-days. Drinking tea or coffee decreased the hypertension risk. The abnormality of BMI, triglyceride and fasting blood sugar increased the risk of hypertension after stratified analysis by tertile of those risk factors. Genetic polymorphism of CYP1A1 m1 (T6235C) was not related with hypertension but MPO G-463A valent genotype (GA/AA) increased the risk of hypertension.