OMICS International
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Yaping Tian et al., J Clin Exp Cardiolog 2015, 6:4
http://dx.doi.org/10.4172/2155-9880.S1.023

5th International Conference on

Clinical & Experimental Cardiology

April 27-29, 2015 Philadelphia, USA

The studies on the new blood biomarkers insubclinical coronary atherosclerosis in Chinese populations

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The progression of cardiovascular diseases is usually need many years and associate with lipid metabolism disorder and inflammation. Finding the risk and prevention at an early stage(subclinical coronary atherosclerosis) are very important. So we aim to explore the risk factors related with the pathology of cardiovascular system in variety patients. Patients who underwent Computed tomography angiography (CTA) have been studied. A total of 659 were enrolled in this study. All the subjects enrolled had no clinical cardiovascular disease symptoms. Logistic regression showed apart from age, hypertension, smoking, triglyceride, low-density lipoprotein (LDL) cholesterol, and total bilirubin, Hcy was an independently risk factor of the severity of coronary disease. And Hcy was also found an independent predictor for the presence of calcified plaque. When the participants were divided into 4 groups according to serum Hcy quartiles (Q1-Q4 groups), both the percentage of patients with >50% stenosis and the percentage of patients with calcified plaque were higher in Q4 compared to other groups. The OR of Hcy (>15μmol/L) for >50% stenosis was 2.212 (95% CI=1.119 to 4.375, p=0.022) and the OR for Hcy (>15μmol/L) for calcification was 1.668 (95% CI=1.030 to 2.699, p=0.037) respectively. The correlation between serum lipid profile with carotid intima-media thickness and plaque have been studied. 402 patients without apparent clinical atherosclerosis in a cross-sectional study (mean age 50.16 years; 36.07% female) have been involved. Demographics, anthropometrics, and laboratory data were collected. The presence of carotid IMT and plaque were evaluated by ultrasonography. The results showed that carotid IMT was correlated with LDL-C (r=0.137, p=0.009), non-LDL-C levels (r=0.140, p=0.008) and LDL-C/HDL-C ratio (r=0.169, p=0.001). After adjustment for potential covariates, LDL-C (β=0.099, p=0.030) and LDL-C/HDL-C ratio (β=0.132, p<0.001) were independent variables that interacted on carotid IMT. Other risk factors including age and systolic blood pressure were independently associated with carotid IMT. LDL-C levels, non-HDL-C levels, TC/HDL-C and LDL-C/HDL-C ratios were significantly higher, but HDL-C levels were significantly lower in subjects with carotid plaque than those without it. The subsequent multiple logistic regression analysis showed that HDL-C (OR; 0.236, 95%CI; 0.073-0.758, p=0.015) and LDL-C/HDL-C ratio (OR; 1.535, 95%CI; 1.047-2.124, p=0.037) were significantly associated with the presence of carotid plaque after adjustment of age. Serum microRNAs might be potential biomarkers for subclinical coronary atherosclerosis. Solexa sequencing followed by bioinformatics analysis was used to predict novel miRNAs. 3 novel miRNAs (N1, N2 and N3) have been screening out and then it were validated by 80 control individuals, 80 AS patients and 80 UAP patients by quantitative reverse transcriptase polymerase chain reaction. The three new microRNAs were all expressed in the three groups. N1 and N3 expressed highest in AS group. The predictive values of N1 with an area under the ROC curve (AUC) of 0.811 (95% confidence interval 0.743-0.880) and N3 with an AUC of 0.748 (95% confidence interval 0.664-0.833) were higher than the high-sensitivity C-reactive protein (hsCRP) with an AUC of 0.617 (95% confidence interval 0.530-0.704) for AS. These studies indicated that serum Hcy and LDL-C/HDL-C ratio represents as an independent index associated with the early stages of atherosclerosis, especially on the subclinical periods. Serum microRNAs might be new potential supplement biomarkers for subclinical coronary atherosclerosis.

Biography

Yaping Tian, Professor of Department of Clinical Biochemistry, Chinese PLA General Hospital and Military Medical School, Professor of Nankai University, Professor of Tsinghua University. Dr Tian received his Master Degree in Medicine from Chinese PLA Postgraduate Medical School and PhD from Academy of Military Medical Sciences. He had been trained as Postdoctoral Fellow for 2 years in The Queen Elizabeth Hospital, Australia. Dr. Tian has been focusing on the study of the specific serum proteomic profiles and genetic signatures in different diseases, especially on cancer. He also focused on the studies of antioxidants in herbal medicine and free radical biology. Dr. Tian has received more than 20 grants and published more than 300 scientific papers in peer-reviewed journals. He is on the editorial boards of several journals and the chairman of the Clinical Biochemistry and Applied Molecular Biology Association, CSBMB.

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