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Urinary Apolipoprotein A1 and its Potential as a Biomarker for Coronary Artery Disease in Young Adults
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Abstract
INTRODUCTION: Very few studies have focused on exploring the utilisation of urinary protein biomarkers to improve the risk stratification of coronary artery disease (CAD) in young adults. Apolipoprotein A1 (ApoA1) as a primary constituent protein of High-density Lipoprotein (HDL) known to modulate cholesterol metabolism exhibits promising properties to be used as a protein biomarker, specifically for CAD in young adults. Thus, this study is aimed to evaluate the potential of urinary ApoA1 as a urinary biomarker of CAD in young patients with acute myocardial infarction (AMI). MATERIALS AND METHOD: This case-control study recruited 40 newly diagnosed AMI patients and 40 healthy control subjects aged 18–45. Urine samples were collected from all subjects. Once centrifuged, the supernatant was collected and stored at -80 °C until further analysis. The urinary concentration of ApoA1 was quantified using the ApoA1 Enzyme-linked Immunosorbent Assay (ELISA) kit according to the manufacturer's protocol. All subjects' risk factors were determined and documented, such as smoking status, Body Mass Index (BMI), blood pressure, plasma total cholesterol, and glucose levels. RESULTS: The mean age of AMI patients was higher than the controls; 37.1 1 ± 5.2 and 31.6 ± 8.1 years respectively. The mean urinary concentration of ApoA1 of AMI patients was significantly higher than the controls (12. 442 ± 3.571 vs. 10.067 ± 5.606 ng/mL ($p<0.05$). Following an adjustment to other conventional CAD risk factors, there was an insignificant association between urinary excretion of ApoA1 and AMI in young adults (Odd Ratio (OR)=3.123, 95% CI: 0.756–1.015, $p>0.05$). CONCLUSION: A significant elevation of urinary excretion of ApoA1 in AMI young adults demonstrated its potential use as a urinary protein biomarker for CAD in young adults.

Author Keywords
Apolipoprotein A1; biomarkers; coronary artery disease; urinary; young adults

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