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Urinary 8-iso-prostaglandin F2α and serum malondialdehyde relationship with estimated Glomerular Filtration Rate (eGFR) and urine albumin to creatinine ratio

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Chronic kidney disease (CKD) is one of serious complications common in type 2 diabetes mellitus patients. It is important to know its pathophysiology in order to find out the appropriate strategy to prevent its initiation and progression. Oxidative stress may contribute to the development of CKD through its capacity in glomerular and tubular endothelial dysfunction. The aim of this study was to analyze the correlation between oxidative stress with eGFR and UACR. This is the first report of a cohort study results which analyzed cross-sectionally. Urinary 8-iso-prostaglandin F2α was measured by enzyme-linked immunoassay, serum MDA by TBARS assay, and UACR using BCG albumin assay. eGFR was calculated using corrected Cockroft-Gault (CG), MDRD, and CKD-EPI equation. Other necessary data were obtained through questionnaires. The results showed that increasing level of MDA was mildly correlate with the decline in eGFR (n=54) ($r=-0.272$, $p<0.05$) based on MDRD, but not for CG and CKD-EPI. In contrary, even after smoker exclusion, there was significant positive correlation between 8-iso-Prostaglandin F2α concentration and eGFR (n=57) based on MDRD study, CG, and CKD-EPI ($r=0.440$, $p=0.001$; $r=0.456$, $p<0.001$; $r=0.475$, $p<0.001$). However, no significant correlation between MDA with UACR ($r=0.268$, $p=0.05$) and 8-iso-prostaglandin F2α with UACR ($r=-0.022$, $p=0.870$). UACR itself inversely correlate with eGFR based on MDRD, CG and CKD-EPI (n=57) ($r=-0.314$, $p<0.05$; $r=-0.280$, $p<0.05$; $r=-0.278$, $p<0.05$). This important finding suggest that MDA and 8-iso-prostaglandin F2α, independent of smoking status, may play a role in the pathophysiology of chronic kidney disease in indonesian type 2 diabetes mellitus patients.

Biography

Rani Sauriasari has completed his BPharm from Pharmacy Universitas Indonesia and her PhD from Medical Faculty, Okayama University, Japan. She was awarded National UNESCO-L'Oreal Fellowship for Women in Science program and has published several articles on oxidative/nitrosative stress, diabetes and kidney diseases. Now she is Manager of Research and Community Engagement at Faculty of Pharmacy, Universitas Indonesia and editor-in-chief for Bulletin of Pharmaceutical Sciences Journal.

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