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CONFERENCE PROCEEDINGS

**“Addressing Global Health Challenges,
with Current Trends in Biochemistry
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**27th June 2025
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Total Cholesterol – High Density Lipoprotein Ratio as an Indicator of Diabetic Nephropathy

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Background: Accumulation of toxic lipid metabolites in non-adipose tissues (Lipotoxicity), playing a crucial role in diabetic nephropathy. Relationship of Total Cholesterol – High Density Lipoprotein (TC-HDL) ratio as a lipotoxic index with proteinuria in diabetes has not yet been well established.

Objectives: To investigate the impact of TC-HDL ratio as a Lipotoxic Index of diabetic nephropathy.

Methods: A retrospective cohort study was carried out in 674 non-proteinuria diabetes mellitus patients attending the Diabetic Clinic, Teaching Hospital Jaffna. The patients were followed for two years (2021-2023) to monitor the development of proteinuria. The TC-HDL ratio was calculated at the admission to the clinic as baseline and during the following two years. Independent sample t-test, paired t-test and Receiver Operating Characteristic (ROC) curve analysis were performed.

Results: At the end of the 2nd year 102 patients developed proteinuria. The mean TC-HDL ratio of study population during baseline, 1st and the 2nd year was 2.42 (± 1.12), 2.57 (± 0.89) and 2.93 (± 0.99) respectively. TC-HDL ratio of all three years revealed significant mean differences between the proteinuria and non-proteinuria patients ($p < 0.001$). Both proteinuria (baseline and 1st year, $p = 0.084$; 1st and 2nd years, $p = 0.002$) and non-proteinuria (baseline and 1st year & 1st and 2nd years, $p < 0.001$) groups of patients showed significant increase in TC-HDL ratio over the two years. The Area Under Curve (AUC) of TC-HDL ratio at Baseline, 1st Year and 2nd year were 0.759, 0.778 and 0.673 respectively (CI=95%).

Conclusion: The TC-HDL ratio showed a good discriminatory power in the early phase of proteinuria development in diabetes and declines over time. These findings suggested that TC-HDL ratio may be a potential indicator of diabetic nephropathy; however, further validation is needed for the assessment of long-term predictive reliability.