

Association of Red Cell Morphology with Selected Biochemical Parameters in Iron Deficiency Anaemic and Non-Iron Deficiency Anaemic Type 2 Diabetic Patients, Attending the Diabetic Centre, Teaching Hospital Jaffna

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Background: Both iron deficiency anaemia (IDA) and non-iron deficiency anaemia (NIDA) are multifactorial phenomena and independent risk factors for the development and progression of diabetic-related microvascular and macrovascular complications.

Objective: The objective of this study was to find the association of red blood cell morphology with selected biochemical parameters among IDA and NIDA type 2 diabetic patients, attending the Diabetic Centre, Teaching Hospital Jaffna.

Methodology: This study was a descriptive cross-sectional study and 300 patients were selected by systematic random sampling. The haemoglobin (Hb), serum ferritin and Total Iron Binding Capacity (TIBC) were estimated, and a peripheral blood smear was prepared. Data were described as numbers and percentages. Statistical analysis was carried out by independent sample t-test and Mann-Whitney U-test.

Results: Among the total 300 patients, 32 patients had IDA while 37 patients had NIDA. All the IDA patients exhibited microcytic hypochromic blood pictures. All those who had IDA exhibited microcytic hypochromic blood pictures along with teardrops (n=9) elliptocytes (n=8) and both teardrops and elliptocytes (n=5). Meanwhile, NIDA patients had normocytic normochromic (n=9), normocytic hypochromic (n=12) and microcytic hypochromic (n=16) blood pictures. IDA (n=10) and NIDA (n=16) patients with microcytic hypochromic blood picture had median serum ferritin levels of 8.20 (4.52-9.37) and 19.90 (14.47-37.20) ng/ml and median TIBC level of 712.91 (560.93-759.56) and 575.10 (332.52-648.32) ug/dl respectively with no significant difference. The median of serum ferritin level decreased as the red cell morphology changed from microcytic hypochromic [8.20 (4.52-9.37)]ng/ml to elliptocytes [7.50 (4.25-8.15)]ng/ml to teardrops [6.90 (3.67-8.10)]ng/ml.

Conclusion: Some of the patients with NIDA have possibility to develop IDA and hence it is important to evaluate both the biochemical and red cell morphology of the diabetic patients to identify and manage the development of both IDA and NIDA effectively and efficiently.

Keywords: Diabetes Mellitus, Iron deficiency anaemia, Non-Iron deficiency anaemia, Biochemical parameters, Red Cell Morphology.