



A Cross sectional study on the Role of Red cell distribution width as a tool to assess the severity of chronic liver disease in a tertiary care hospital

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Introduction

Red blood cell distribution width (RDW) is a measurement of the range of RBC volume, size variation and an index of the heterogeneity of circulating RBCs. It is a well-established parameter for identifying the cause of anemia. In the presence of morphologic anisocytosis, RDW (normally 11-24%) increased to 15-18%. In microcytic anemia, it is used to differentiate between iron deficiency and thalassemia in which the former has large RDW and in the later, though the red cells are small are generally uniform in size with a normal small RDW. Large RDW also indicate a dimorphic anemia in case of chronic atrophic gastritis that produce both vitamin B12 malabsorption and deficiency to cause macrocytic anemia and blood loss to cause iron deficiency.¹ RDW has been indicated to be an inflammatory indicator for prognosis in a variety of diseases.^{2,3}

Aim of the Study

- The aim of the study was to compare the values of RDW in alcoholic and non-alcoholic chronic liver disease and to determine if RDW follows the severity of

disease according to Child-Pugh score severity and MELD-Na score.

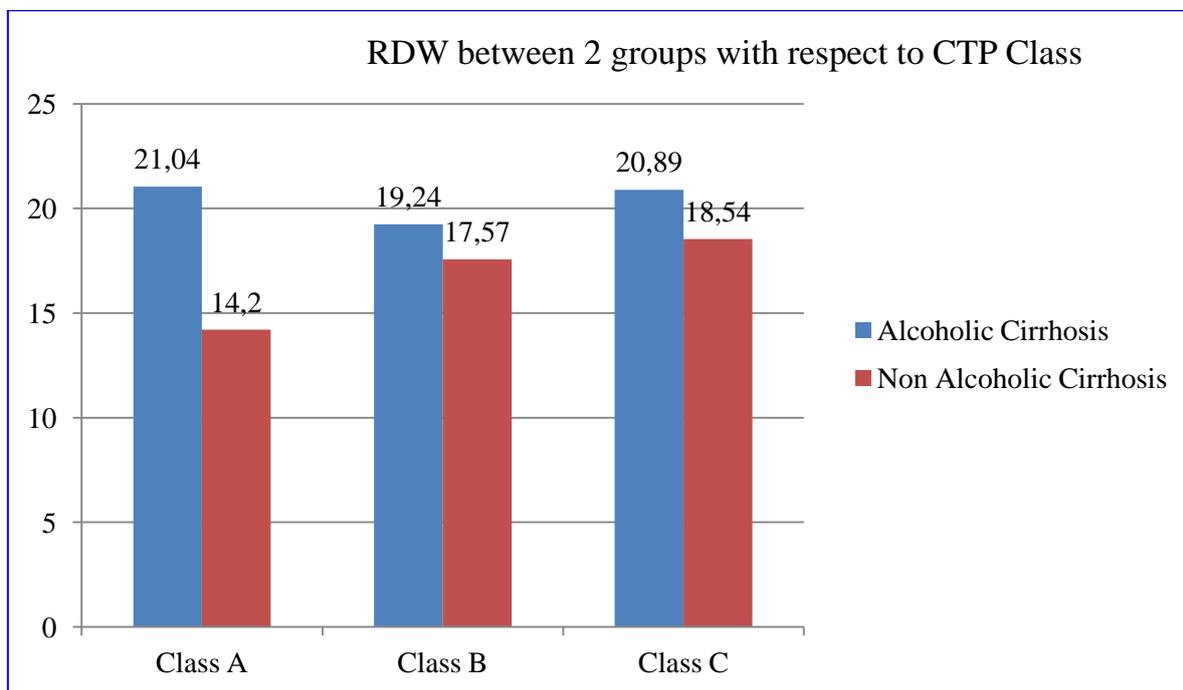
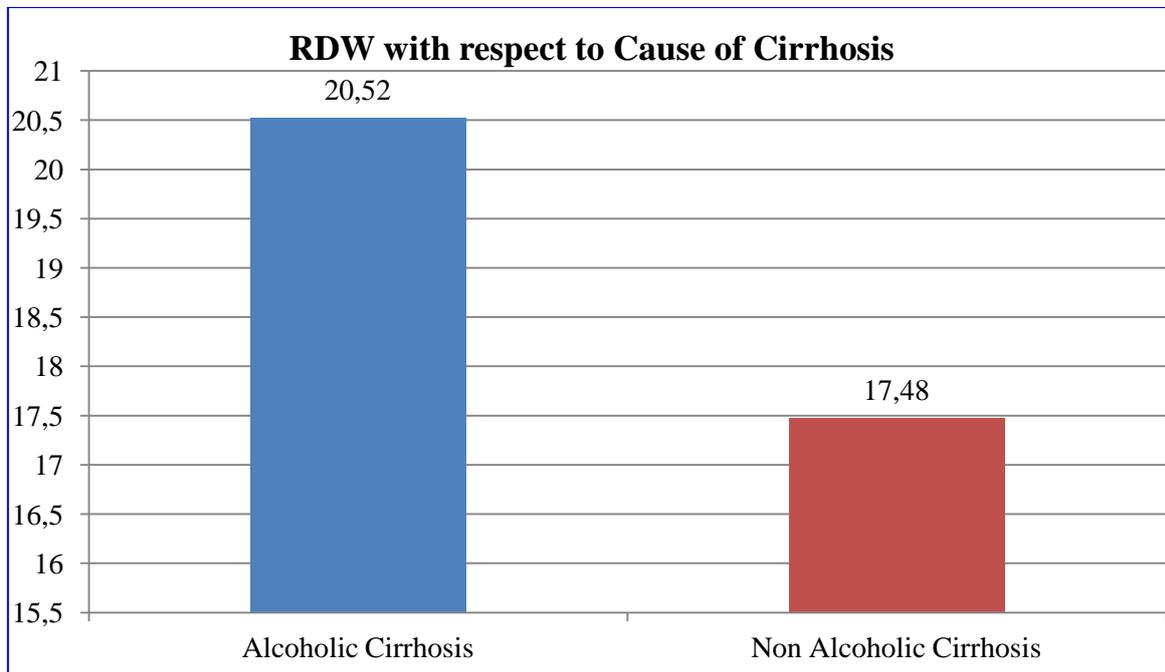
Materials & Methods

- Cross sectional observational study carried out at GEMS hospital, department of General medicine, Srikakulam, Andhra Pradesh from November 2020 to February 2021, a period of 3 months with a sample size of 108 patients who are diagnosed with chronic liver disease (CLD).
- Patients have been divided into two groups, first group were alcoholics and the other were non-alcoholics.
- Severity of CLD was determined by Child-Pugh score and MELD NA score. RDW was measured using the automatic analyser. Normal range of RDW 11–15%. Correlation between RDW and CTP Score, MELD NA score has been analysed using pearson correlation.

Results

- Out of 108 patients 86 were male and 22 were female. alcoholic – 66, non-alcoholic- 42.

- In alcoholics mean RDW was 20.52% and in non-alcoholics mean RDW was 17.48%.
- Significant difference was observed between RDW of alcoholic and non-alcoholic cirrhosis (P- 0.005).
- There was no significant correlation between RDW and CTP class and MELD-NA score neither in alcoholics nor in non-alcoholics.



Discussion

The proposed mechanisms underlying the increased RDW in liver disease are

a) Inflammatory cytokines may suppress erythrocyte maturation.

b) Nutrition deficiency and Hypersplenism accelerate red blood cells destruction and promote the release of immature RBC from bone marrow.

The lifespan of red blood cells is approximately 120 days, RDW may reflect the disease status for a longer period. Fan X et al found that RDW levels are increased in HBV-associated liver disease and correlated with the severity of the disease suggesting that RDW values may differentiate CHB from healthy controls.³ Hu et al found that increased RDW was associated with poor hospitalization outcome in CLD.⁴ Lou et al found that RDW was a useful prognostic parameter for 3-month mortality in HBV infected patients. However, Milic *et al.* found that statistically significant increase of RDW relevant to the disease severity was not observed in both groups.⁵

Conclusion

RDW, a cost-effective and easily available laboratory hematological parameter has significant difference between alcoholic and non-alcoholic CLD but no significance correlation according to CTP severity and MELD NA score neither in alcoholics nor in non-alcoholics.

References

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