Section: General Medicine

Original Research Article

CORRELATION OF RED CELL DISTRIBUTION WIDTH WITH THE SEVERITY AND CLINICAL PARAMETERS OF CORONARY ARTERY DISEASE IN A SOUTH INDIAN COHORT

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ABSTRACT

Background: Coronary artery disease (CAD) remains a leading cause of morbidity and mortality worldwide. Early detection and risk stratification are crucial for improving patient outcomes. Among the various biomarkers under investigation, Red Cell Distribution Width (RDW), which measures the variation in red blood cell size, has emerged as a potential indicator for the severity of CAD. This study aimed to explore the relationship between RDW levels and CAD severity, hypothesizing that elevated RDW values correlate with more advanced stages of CAD.

Materials and Methods: This prospective observational study was conducted at Government Theni Medical College over 18 months, enrolling 100 patients diagnosed with acute coronary syndrome (ACS) and other CAD-related conditions. Data were collected using clinical history, examination, and laboratory tests, including complete blood count (CBC) with RDW measurements. Statistical analysis was performed using SPSS software, employing the Chi-square test, Spearman's rank correlation, and Karl Pearson correlation methods.

Results: The study cohort had a mean age of 56.04 years, with 65% male patients. RDW scores were significantly higher in patients with STEMI compared to those with Non-STEMI or Unstable Angina ($p < 0.001$). RDW was also strongly associated with systolic and diastolic blood pressures ($p < 0.001$). Patients with greater RDW scores exhibited higher blood pressure levels and more severe left ventricular dysfunction (LVEF). A significant correlation was found between RDW scores and the severity of left ventricular dysfunction, with higher RDW values associated with poorer LVEF ($p < 0.001$).

Discussion: RDW levels correlate with the severity of CAD, particularly in patients with STEMI. The findings suggest that RDW could serve as a simple, inexpensive marker to assess CAD severity, particularly when combined with other clinical indicators like LVEF and blood pressure.

Conclusion: Elevated RDW levels are significantly associated with more severe forms of coronary artery disease, including STEMI, higher blood pressure, and worse left ventricular function. RDW may be a useful adjunctive biomarker for assessing the severity of CAD, providing valuable prognostic information for clinical decision-making.

Keywords: Coronary Artery Disease, Red Cell Distribution Width, Acute Coronary Syndrome, Prognostic Biomarker, Coronary Angiography.

INTRODUCTION

Coronary artery disease (CAD) is still a primary cause of morbidity and mortality globally, frequently appearing as an acute myocardial infarction, angina, or other cardiovascular problems.[1] The discovery of reliable biomarkers for measuring the severity of CAD is critical for early detection, risk stratification, and treatment management. Among the different hematological indices, Red Cell Distribution Width (RDW), which measures the variability in the size of circulating red blood cells, has received interest for its possible significance in cardiovascular disease prognosis.[2] In recent years, research has revealed that an elevated RDW may be linked to a range of systemic diseases, including inflammatory and oxidative stress states, both of which are important in the pathogenesis of CAD.[3] RDW is a simple, inexpensive, and generally available measure that could be used as an additional prognostic tool to assess CAD severity.[4] Several processes, such as endothelial dysfunction, inflammation, and poor red blood cell maturation, have been postulated to explain the possible relationship between RDW and cardiovascular disease. However, the exact association between RDW levels and CAD severity is still being investigated.[5,6] This study intends to investigate the relationship between RDW levels and the severity of coronary artery disease, with the hypothesis that greater RDW values are related with more advanced stages of CAD. This study aims to better understand the potential role of RDW as a biomarker for CAD severity by evaluating it alongside traditional risk factors and diagnostic modalities such as coronary angiography, with the ultimate goal of improving early detection and management strategies for patients at risk of cardiovascular events.

MATERIALS AND METHODS

Source of Data

Patients admitted with coronary artery disease in the medical wards and those on regular follow-up in the Department of General Medicine, Government Theni Medical College, were included in the study. Only patients who met the inclusion and exclusion criteria were selected for the study group.

Type of Study: Prospective Observational study

Study Duration: 18 months

Sample Size: This is a prospective observational study that includes 100 patients who meet the inclusion and exclusion criteria.

Methodology

Data was collected from patients who meet the inclusion and exclusion criteria and are admitted to Theni Medical College Hospital, Theni.

Inclusion Criteria

- Acute Coronary Syndrome (ACS).
- Atypical angina with conventional risk factors (e.g., Diabetes Mellitus, Hypertension, Obesity, Family history of CAD, Chronic Smoking, Chronic Alcohol Intake), or Chest pain with a positive treadmill test indicative of inducible ischemia.

Exclusion Criteria

- Hemoglobin levels <12 g/dL in men and <11 g/dL in women.
- Patients with a previous history of Percutaneous Coronary Intervention (PCI), Coronary Artery Bypass Grafting (CABG) surgery, Valvular Heart Disease, Bleeding Disorders, Chronic Kidney Disease (CKD), Estrogen Replacement Therapy (ERT), Anemia and Blood Transfusions, Liver Disease, Pregnancy, or Thrombotic Thrombocytopenic Purpura (TTP) were excluded from the study.

Data Collection

Written informed consent was obtained from patients or their close relatives in the case of acute coronary syndrome patients in the intensive care unit. A detailed history was taken using a structured questionnaire, followed by a thorough clinical examination and necessary investigations. Blood samples was collected in EDTA tubes for analysis in an automated cell counter. The complete blood count (CBC) were include the determination of Hemoglobin, Mean Corpuscular Volume (MCV), Hematocrit (HCT), and Red Cell Distribution Width (RDW).

Statistical Methods

Data was analyzed using SPSS software (version 22). Statistical evaluation was performed using appropriate statistical methods, including the Chi-square test, Spearman's rank correlation method, and Karl Pearson correlation method. Variables was considered statistically significant if $p < 0.05$.

RESULTS

The current study was done over a year at Theni Government Medical College Hospital in Tamil Nadu, and included 100 instances of acute coronary artery disease (CAD) that were age and gender matched. A proforma was used to record clinical information as well as RDW scores. The acquired data was placed into a master chart and then examined. Out of the 100 cases, the majority (42%) were in the age group of 51-60 years, followed by 25% in the age group of 41-50 years. The remaining cases were distributed across the other age groups, with 16% in the 61-70 years range and 11% in the >70 years category. Only 6% of the cases were under 40 years of age. The mean age of the study population was 56.04 years, with a standard deviation of 10.66 (Fig.1).

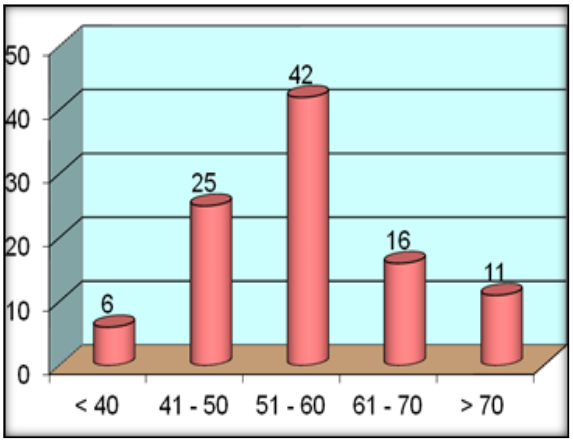

Figure 1: Age distribution

Distribution of gender

In this study, 65 of the 100 cases were male, whereas 35 were female. This implies that acute coronary artery disease affects males more than females, with a prevalence of 65% in males and 35% in girls. This gender discrepancy emphasizes guys' increased susceptibility to coronary artery disease in this population (Fig 2).

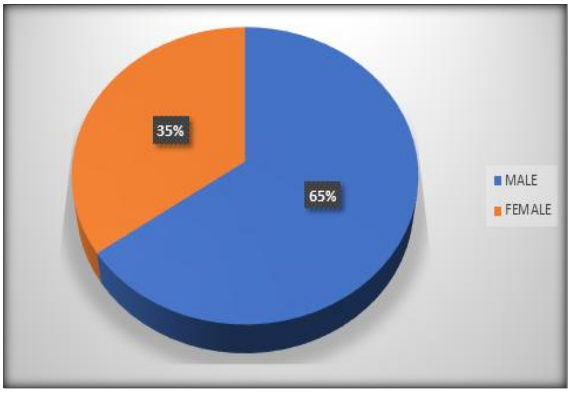

Figure 2: Distribution of Gender

Comparing Age, RDW Score, and Diagnosis

In this study, the link between age and RDW score was statistically significant (p-value = 0.029). The mean RDW scores varied by age group, with the highest in the 51-60 age group (15.61) and the lowest in the >70 age group (14.78). This suggests that age affects RDW levels in those with acute coronary artery disease. However, there was no significant link detected between age and diagnosis type (STEMI, N-STEMI, and UA). The p-value of 0.521 suggests that age has no significant effect on the distribution of diagnoses within the research group. STEMI was the most common diagnosis across all age categories, with N-STEMI and UA accounting for fewer instances (Fig. 3). This implies that, whereas RDW scores fluctuate with age, patients' ages have no meaningful effect on the type of acute coronary syndrome they come with.

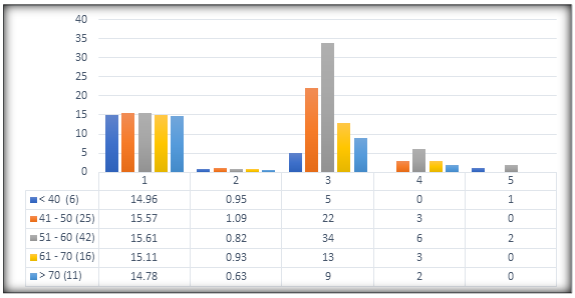

Figure 3: Comparison of Age, RDW Score, and Diagnosis

Comparison of Gender, RDW Score, and Diagnosis

The analysis of gender and RDW score revealed no significant correlation, with a p-value of 0.65. The mean RDW for males was 15.42 (SD = 1.00), while for females, it was 15.33 (SD = 0.80). This indicates that gender does not have a substantial effect on RDW scores in patients with acute coronary artery disease, as the difference in RDW between males and females is minimal and statistically insignificant. Similarly, when comparing gender with the type of diagnosis (STEMI, N-STEMI, and UA), no significant correlation was found, with a p-value of 0.737. In total, 54 males and 29 females were diagnosed with STEMI, 8 males and 6 females with N-STEMI, and 3 males with UA (Fig. 4). These results suggest that gender does not significantly influence the distribution of diagnoses in the study group, with both males and females showing similar patterns in the types of acute coronary syndrome they experienced.

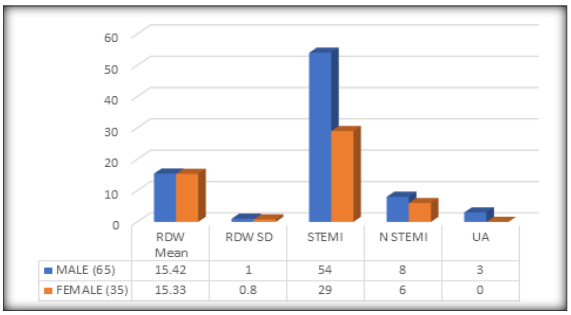

Figure 4: Comparison of Gender, RDW Score, and Diagnosis

Distribution of Symptoms

In this study, chest pain was the most common symptom, reported by 72% of the patients, emphasizing its prevalence in acute coronary artery disease. Shortness of breath was the second most prevalent symptom, occurring in 7% of instances, followed by easy fatiguability, paroxysmal nocturnal dyspnea (PND), and orthopnea, which were reported by 5% of patients. Only 1% of patients reported symptoms such as nocturnal cough, limb edema, and palpitation. These results highlight chest pain as the most common symptom in the research group, with other symptoms appearing less frequently (Table 1).

Table 1: Distribution of Symptoms

SYMPTOMS	No. of cases
Chest pain	72
Easy fatiguability	5
Shortness of breath	7
PND	5
Orthopnoea	5
Nocturnal cough	4
Swelling of legs	1
Palpitation	1
Total	100

Distribution of Personal History

In this study, smoking was the most common personal history, with 37% of patients saying that they smoked. Alcohol intake was reported in 25% of instances, while 19% of patients smoked and drank. The remaining 19% of patients had no prior smoking or alcohol use (Fig. 5). These findings show that smoking is the most common personal habit in the study group, followed by alcohol intake, with a significant number of patients engaging in both activities.

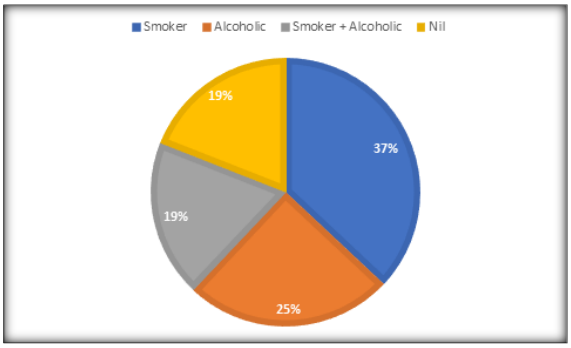

Figure 5: Distribution of Personal History

Comparison of Personal History and RDW Score Mean

The investigation of personal history and its relationship to RDW scores found a strong correlation. Patients with a smoking history had the highest RDW mean of 15.63, followed by alcoholics at 15.58. Those who smoked and drank had a slightly lower RDW mean of 15.50, whereas patients who had no history of smoking or alcohol use had the lowest RDW mean of 14.54. A p-value of <0.001 shows a significant difference in RDW scores across groups (Table 2). These findings indicate that smoking and alcohol consumption are related with higher RDW scores in patients with acute coronary artery disease, highlighting the impact of these lifestyle behaviors on red blood cell dispersion. [Table 2]

Comparison of Diagnosis and RDW Score Mean

The comparison of RDW scores across diagnosis types revealed a substantial difference. those with STEMI had the highest RDW mean (15.55), followed by those with Non-STEMI at 14.69, and those with Unstable Angina had the lowest RDW mean (14.00). A p-value < 0.001 shows a statistically significant link between diagnostic type and RDW scores (Table 3). These findings indicate that RDW scores are significantly higher in STEMI patients, compared to those with Non-STEMI and Unstable Angina, indicating RDW's potential usefulness as a marker for the severity of acute coronary syndrome. [Table 3]

Table 2: Comparison of Personal History and RDW Score Mean

PERSONAL HISTORY VS RDW SCORE		
Personal History	**Mean**	**SD**
Smoker	15.63	0.82
Alcoholic	15.58	1.15
Smoker + Alcoholic	15.50	0.73
Nil	14.54	0.48
p value	<0.001	

Table: 3 Comparison of Diagnosis and RDW Score Mean

DIAGNOSIS VS RDW SCORE		
DIAGNOSIS TYPE	**RDW Mean**	**RDW SD**
STEMI	15.55	0.90
NON STEMI	14.69	0.64
UNSTABLE ANGINA	14.00	0.17
p value	<0.001 Significant	

Distribution of Diagnosis Sites

In this study, the majority of patients (65%) were diagnosed with anterior wall myocardial infarction (AWMI), while 30% were diagnosed with inferior wall myocardial infarction (IWMI). A minor percentage (5%) of patients had both AWMI and IWMI. These findings show that AWMI was more common than IWMI in the study population, emphasizing the higher rate of anterior wall infarctions in this cohort.

Comparison of Diagnosis Site and RDW Score Mean

The investigation of RDW scores by diagnosis site (AWMI, IWMI, or both AWMI and IWMI) revealed no significant connection. Patients with AWMI had a mean RDW of 15.46; those with IWMI had a mean RDW of 15.22; and patients with both AWMI and IWMI had a mean RDW of 15.40. The p-value of 0.509 suggests that the difference in RDW scores between diagnosis locations is not statistically significant. These data indicate that the site of myocardial infarction (anterior wall, inferior wall, or both) had no significant effect on RDW levels in patients with acute coronary artery disease.

Distribution of RDW Scores

In this study, the RDW scores were divided as follows: 39% of patients had an RDW score less than 15.0, 37% had an RDW score between 15.1 and 16.0, and 24% had an RDW score greater than 16.00. This distribution suggests that the majority of patients in the study had RDW scores between 15.1 and 16.0, with a smaller number having RDW scores more than 16.0. These findings demonstrate that RDW levels vary across patients with acute coronary artery disease, with a significant proportion presenting with modestly higher RDW scores.

Comparison of RDW Score and Diagnosis Type

The comparison of RDW scores across different diagnosis types (STEMI, Non-STEMI, and Unstable Angina) revealed significant differences. The p-value for the correlation between RDW score and diagnosis type was 0.002, indicating a statistically significant relationship. Most patients with STEMI had RDW scores between 15.1 and 16.0, while a significant number had RDW scores above 16.0. In contrast, patients with Non-STEMI showed a different distribution, with a higher percentage having RDW scores below 15.0 (Table 4). These findings suggest that RDW scores are significantly associated with the type of acute coronary syndrome, with higher RDW values observed more frequently in STEMI patients.

Table: 4 Comparison of RDW Score and Diagnosis Type

RDW SCORE VS DIAGNOSIS TYPE			
RDW SCORE DISTRIBUTION	**STEMI**	**N STEMI**	**UA**
< 15.0	25	11	3
15.1 - 16.0	34	3	0
> 16.0	24	0	0
TOTAL	83	14	3
P VALUE	0.002 Significant		

Comparing RDW Score with Platelet Count Mean

The investigation of the association between RDW scores and platelet count revealed no significant link. Patients with RDW scores less than 15.0 had a mean platelet count of 253.4 ± 83.5. Those with RDW scores between 15.1 and 16.0 had a mean platelet count of 246.1 ± 73.9. Patients with RDW values greater than 16.0 had a mean platelet count of 256.3 ± 76.6. The p-value of 0.866 suggests that there is no statistically significant difference in platelet counts across the RDW score groups, implying that platelet count is not closely associated with RDW levels in individuals with acute coronary artery disease (Table 5).

Table: 5 Comparing RDW Score with Platelet Count Mean

RDW SCORE VS PLATELET COUNT		
RDW SCORE DISTRIBUTION	**MEAN**	**SD**
< 15.0	253.4	83.5
15.1 - 16.0	246.1	73.9
> 16.0	256.3	76.6
P VALUE	0.866 Not significant	

Comparison of RDW Scores and Platelet Indices

This study found no significant link between RDW scores and several platelet indicators, such as PDW, MPV, P-LCR, and PCT. The mean PDW score was 13.10 ± 2.02 for RDW scores under 15.0, 13.16 ± 2.75 for scores between 15.1 and 16.0, and 12.52 ± 1.95 for scores over 16.0, with a p-value of 0.526 suggesting no significant difference. For MPV, the mean was 10.72 ± 0.88 for RDW scores less than 15.0, 10.65 ± 1.11 for scores between 15.1 and 16.0, and 10.55 ± 0.86 for scores greater than 16.0, with a p-value of 0.795 indicating no significant relationship. Similarly, for P-LCR, the mean was 29.52 ± 6.48 for RDW scores less than 15.0, 29.49 ± 9.13 for scores between 15.1 and 16.0, and 28.63 ± 7.40 for scores greater than 16.0, with a p-value of 0.891 indicating no significant difference. The mean PCT was 0.28 ± 0.06 for RDW scores under 15.0, 0.27 ± 0.07 for scores between 15.1 and 16.0, and 0.29 ± 0.06 for scores over 16.0, with a p-value of 0.543 showing no significant connection. These findings indicate that RDW scores show no significant connection with any of the platelet indicators in patients with acute coronary artery disease.

Comparison between RDW Score and Clinical Parameters

This study found no significant relationships between RDW scores and other clinical measures such as heart rate (HR), SpO2, respiratory rate (RR), and hemoglobin. The average heart rate (HR) was 100.31 ± 12.17 for RDW scores below 15.0, 103.46 ± 13.41 for scores between 15.1 and 16.0, and 103.00 ± 8.34 for scores over 16.0. There is no significant association between HR and RDW scores (p-value = 0.473). SpO2 levels averaged 93.62 ± 3.31 for RDW scores below 15.0, 92.95 ± 3.13 for RDW scores between 15.1 and 16.0, and 94.83 ± 2.28 for RDW scores beyond 16.0. There is no significant connection between SpO2 and RDW scores (p-value = 0.063). The average respiratory rate (RR) was 22.56 ± 4.35 for RDW scores under 15.0, 22.81 ± 5.60 for RDW scores between 15.1 and 16.0, and 23.75 ± 5.94 for RDW scores beyond 16.0. The p-value of 0.672 indicates no significant relationship between RR and RDW scores. The average hemoglobin (Hb) level was 10.95 ± 2.64 for RDW scores below 15.0, 10.71 ± 2.29 for RDW scores between 15.1 and 16.0, and 10.19 ± 2.15 for RDW scores beyond 16.0. There is no significant link between Hb levels and RDW scores (p-value = 0.475).

Correlation Between RDW Score and Blood Pressure

The study found a strong relationship between RDW score distribution and systolic and diastolic blood pressure. Individuals with an RDW score < 15.0 had a mean systolic blood pressure (SBP) of 101.28 mmHg, those with RDW scores between 15.1 and 16.0 had a mean SBP of 118.11 mmHg, and those with RDW scores > 16.0 had a mean SBP of 138.21 mmHg. The p-value < 0.001 suggests a significant association between RDW and systolic blood pressure. Similarly, diastolic blood pressure (DBP) correlated significantly with RDW score distribution. Individuals with RDW scores < 15.0 had a mean DBP of 64.10 mmHg, those with RDW scores 15.1–16.0 had a mean DBP of 73.22 mmHg, and those with RDW scores > 16.0 had a mean DBP of 83.50 mmHg. A p-value of < 0.001 indicates a significant correlation between RDW distribution and diastolic BP. These data indicate that greater RDW scores are linked to higher systolic and diastolic blood pressures (Figure 6).

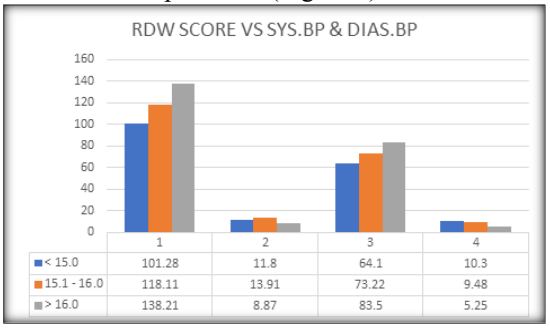

Figure 6: Comparison of RDW SCORE vs SYS.BP & DIAS.BP

Comparison between LVEF and RDW Score

The study found a strong relationship between left ventricular ejection fraction (LVEF) severity and RDW score mean. Individuals with severe LVEF (<30%) had an average RDW score of 15.99, with a standard deviation of 0.67 (54 instances). Those with mild LVEF (30-39%) had a mean RDW score of 14.84 and a standard deviation of 0.69 (34 instances). For people with modest LVEF (40-49%), the average RDW score was 14.23 with a standard deviation of 0.33 (12 instances). A p-value < 0.001 indicates a significant association between LVEF severity and RDW mean, implying that as LVEF severity lowers, the RDW score increases (Figure 7).

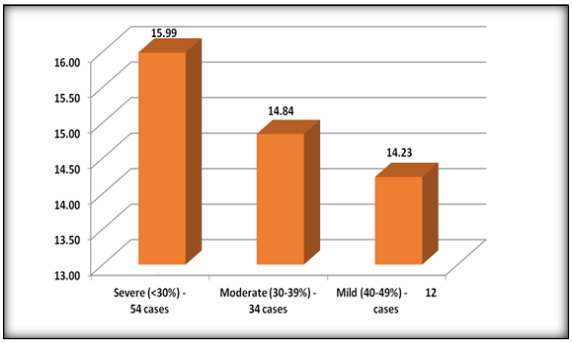

Figure 7: Left Ventricular Dysfunction vs RDW Score

Comparison of Grade of LV Dysfunction and RDW Score

The analysis showed a significant correlation between the grade of left ventricular (LV) dysfunction and RDW score mean. For individuals with Grade 3 LV dysfunction, the mean RDW score was 16.08 with a standard deviation of 0.75 (12 cases). Those with Grade 2 LV dysfunction had a mean RDW score of 15.84 with a standard deviation of 0.73 (26 cases). Individuals with Grade 1 LV dysfunction had a mean RDW score of 15.39 with a standard deviation of 0.94 (39 cases), while those with Grade 0 LV dysfunction had a mean RDW score of 14.50 with a standard deviation of 0.46 (23 cases). The p-value of < 0.001 indicates a significant relationship between the grade of LV dysfunction and RDW mean, suggesting that as the severity of LV dysfunction increases, the RDW score tends to be higher (Figure 8).

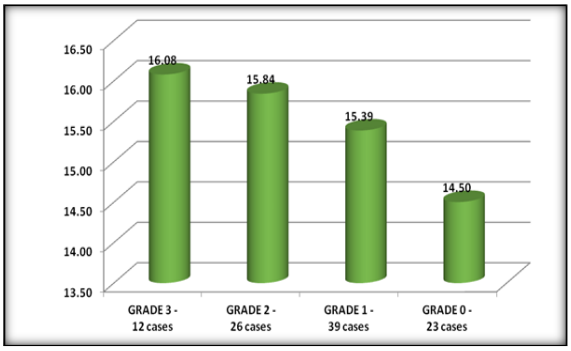

Figure 8: Grade of LV Dysfunction Vs RDQ score

DISCUSSION

The current study aimed to investigate the relationship between Red Cell Distribution Width (RDW) and the severity of Coronary Artery Disease (CAD), and our findings indicate a strong link between higher RDW values and more severe stages of CAD. RDW, which measures the variability in the size of circulating red blood cells, has been linked to a variety of cardiovascular and systemic diseases, including CAD. Our findings show that RDW levels are much greater in patients with more severe forms of CAD, such as STEMI (ST-elevation Myocardial Infarction), compared to those with non-STEMI or unstable angina. Our study indicated that RDW scores were substantially higher in patients diagnosed with STEMI (15.55 ± 0.90) than Non-STEMI (14.69 ± 0.64) and Unstable Angina (14.00 ± 0.17), with a p-value of <0.001. This finding implies that RDW may be a valuable biomarker for assessing the severity of acute coronary syndromes (ACS). Furthermore, the association between RDW scores and systolic/diastolic blood pressure (p-value < 0.001) supports the importance of RDW in the pathogenesis of CAD, since increased RDW is associated with higher blood pressure, a known risk factor for CAD.

Our study found a strong correlation between RDW scores and left ventricular ejection fraction (LVEF). Patients with significant LV dysfunction (<30%) had the highest RDW mean of 15.99. This shows that RDW may be a useful technique for determining not only the presence of CAD but also its functional impact on the heart. There was no significant variation in RDW scores between genders, demonstrating that gender does not influence RDW levels in CAD patients. This is similar with prior research, which found no significant association between RDW and gender in CAD or heart failure patients. Our findings further underscore the importance of lifestyle factors like smoking and alcohol usage in determining RDW levels. Patients who had a history of smoking or alcohol consumption had significantly higher RDW scores, emphasizing the role of these variables in the course and severity of CAD. The found link between smoking and raised RDW levels emphasizes the importance of lifestyle change in CAD management. Our study found no significant associations between RDW and platelet indices or clinical parameters such as heart rate, SpO2, or respiratory rate, implying that RDW is more strongly correlated with CAD severity and functional parameters such as LVEF and blood pressure than with routine clinical measurements.

Comparison with Other Studies

Several studies have examined the role of RDW in CAD, and the results of this study are similar with previous research in the field. Zhao et al. (2021) found that greater RDW was independently linked with increased mortality and worse cardiovascular events in patients with CAD.[7] In keeping with our findings, this investigation discovered that greater RDW levels were associated with the severity of CAD, with the greatest RDW values observed in patients with acute myocardial infarction (AMI), specifically STEMI. Similarly, Xiu et al. (2022) discovered that RDW was a powerful predictor of both short- and long-term outcomes in CAD patients.[8] This study found that elevated RDW levels were associated with poor left ventricular function and higher mortality rates in CAD patients, particularly those with STEMI. These findings are consistent with those of our study, which found greater RDW scores in patients with more severe CAD, including STEMI, and poorer LVEF.

In contrast, Jian et al. (2024) conducted a meta-analysis and concluded that RDW had a moderate predictive value for cardiovascular mortality in CAD patients, but they also stated that RDW should be used in conjunction with other clinical markers because it is not specific enough to be used as a sole predictor.[9] While our study supports the link between RDW and CAD severity, we also emphasize that RDW should not be used alone to diagnose or predict CAD, but rather as part of a larger clinical evaluation. Poz et al. (2019) and Nagula et al. (2017) have proposed that RDW could be beneficial in tracking the course of CAD, particularly in identifying patients who are at risk for unfavorable cardiovascular events. They discovered a strong connection between RDW and inflammatory markers such as C-reactive protein (CRP), which has been hypothesized as a mechanism linking RDW to CAD.[10,11] This is consistent with our findings, which show that RDW

could represent underlying inflammatory and oxidative stress pathways that contribute to the etiology of CAD.

Limitations

While our study found a substantial association between RDW and CAD severity, it has some limitations. To begin with, the study is observational and cross-sectional in nature, therefore causality cannot be established. Second, RDW levels can be altered by a number of conditions, including anemia, nutritional deficits, and liver illness, all of which were eliminated from our investigation; however, these factors may restrict the findings' applicability to all CAD patients. Finally, our study did not include long-term follow-up data, which could have shed additional light on the predictive usefulness of RDW in CAD patients.

CONCLUSION

This work demonstrates the possibility of RDW as a useful biomarker for determining the severity of CAD. Higher RDW levels were substantially linked to more severe forms of acute coronary syndrome, particularly ST-elevation myocardial infarction (STEMI). The data imply that RDW could be used as an early predictor of CAD severity, assisting in risk categorization and management. RDW levels were affected by smoking, alcohol use, and clinical indicators such as blood pressure and left ventricular function. RDW scores were greater in individuals with higher systolic and diastolic blood pressure levels, and there was a link with LVEF, indicating its potential value in detecting cardiac dysfunction.

Despite a limited association with specific clinical criteria, RDW remains a low-cost, user-friendly technique for CAD management. More research is required to confirm its role in varied groups.

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