IS THE RED BLOOD CELL DISTRIBUTION WIDTH A PREDICTOR FOR RESPONSE TO TREATMENT IN ADULT PATIENTS WITH NEPHROTIC SYDNROME?

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OBJECTIVES

In general, patients with treatment-resistance nephrotic syndrome (NS) have a chronic inflammatory state and various degree of oxidative stress. Red cell distribution width (RDW) is also being recognized as a global marker of chronic inflammation and oxidative stress (1). Novel biomarkers for predicting future of response treatment in patient with nephrotic syndrome are needed. There is no study that has been investigated the relationship between RDW levels and response to treatment in patients with NS. We aimed to investigate the relationship between RDW values and treatment response in patients with NS.

METHODS

We conducted a retrospective study of adult patients with NS due to primary glomerulonephritis's between January 2006 and December 2012. Patients were divided into three groups on the basis of their response the treatment. Group 1 was composed of patients with complete remission. Group 2 was composed of patients with partial remission. Group 3 was composed of patients with resistant to treatment. RDW values were obtained before treatment and end of the treatment schedules. Serum fasting blood glucose, albumin, creatinine, uric acid, lipid parameters, and levels of proteinuria were obtained in all subjects. Estimated glomerular filtration rate was calculated. Renal ultrasound was performed in all subjects. Smoking habits were recorded.

Treatment was continued at least for 6 months reducing the steroid dosage every 4 to 8 weeks. Angiotensin-converting enzyme inhibitor (ACEI) was started to eligible subjects. Cyclophosphamide (100 mg/d) or cyclosporine (3 mg/kg/gün) was added to prednisolone for 12 weeks to the patient who did not respond or partially respond to prednisolone. At the end of this period response to treatment of the subjects were assessed.

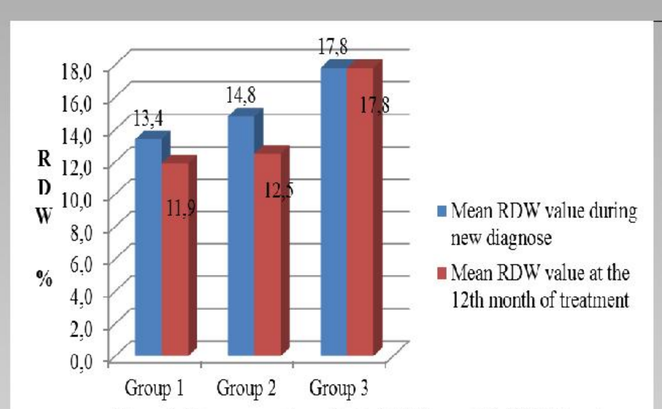

Figure 1. The comperative red cell distribition width (RDW) levels in groups

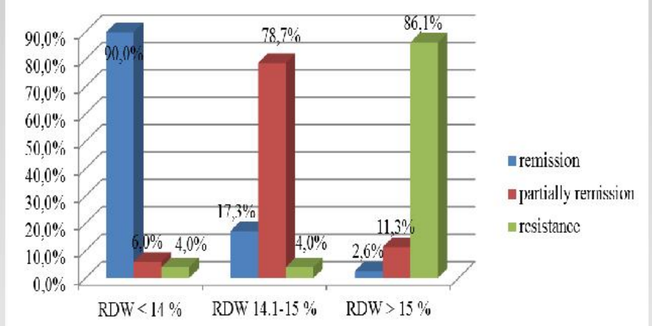

Figure 2. According to initial red blood cell distribition width values, proportion of response to treatment all of patients

RESULTS

A total of 176 patients composed of 3 different groups were recruited to the study. . The patient number of group 1, group 2 and group 3 was found as 55, 53, and 68, respectively. Mean age were 44.9 ± 16.3 in group 1 (n=55), 42.9 ± 16.1 in group 2 (n=53), and 39.75 ± 13.6 in group 3 (n=68) ($p>0.05$). While the highest baseline mean RDW value was found in group 3 patients (17.8 ± 1.8) ($p<0.05$), the lowest mean RDW value was found in group 1 patients (13.4 ± 0.7) before treatment ($p<0.05$). We found significant decrease in RDW value after successful treatment in group 1 and group 2 ($p<0.05$). In group 3 patients, there was no change in RDW value after treatment ($p>0.05$). The most of the patients with remission (n=49, 89%) have a baseline RDW values were under 14% ($p<0.001$, Kendal Tau: -0.86). The most of resistance to treatment was appeared in patients who have RDW level was > 15 % during new diagnose (86.1 %) ($p<0.001$, Kendal Tau: -0.87).

On admission, while statistically significant positive correlation between RDW values and proteinuria, LDL, total cholesterol, and WBC count was detected (for all parameters $p < 0.001$, $r = 0.45$, $r = 0.41$, $r = 0.48$, $r = 0.61$, respectively), statistically significant negative correlation between RDW and serum albumin levels was detected in group 1 patients ($p < 0.001$, $r = -0.47$). After the overall treatment, while statistically significant positive correlation between RDW values and proteinuria, LDL, total cholesterol, WBC count was detected (for all parameters $p < 0.001$, $r = 0.45$, $r = 0.41$, $r = 0.48$, $r = 0.65$ respectively), statistically significant negative correlation between RDW and serum albumin levels was detected in group 1 patients ($p < 0.001$, $r = -0.47$).

CONCLUSIONS

Our results suggest that serum RDW level may be a useful predictive biomarker for therapy efficacy in initial treatment of nephrotic syndrome by reflecting increased inflammatory response.

Our findings are notable given that RDW is widely available to clinicians as part of the complete blood count and therefore it's a cost effective novel marker to evaluating response to NS therapy.

Further studies are required to determine the explanation for the association between RDW and response to NS treatment.

REFERENCES:

1- Süleymanlar G, Serdengeçti K, Altiparmak MR, Jager K, Seyahi N, Erek E; Turkish Registry of Nephrology, Dialysis, and Transplantation. Trends in renal replacement therapy in Turkey, 1996-2008. Am J Kidney Dis. 2011;57(3):456-65

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