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CONTROVERSIES IN MULTIPLE MYELOMA (COMy)

Survival of Multiple Myeloma patients related to RDW

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Abstract:

Multiple myeloma is a disease characterized by clonal expansion of malignant plasma cells that accumulate in the marrow, leading to anemia and associated cytopenias, osteolytic bone disease, hypercalcemia, and renal dysfunction.

RDW is a red cell parameter that quantities cellular volume heterogeneity. RDW has been identified as a prognostic marker in a considerable number of malignancies. However, its role has been occasionally studied in multiple myeloma. This study aims to investigate the significance of RDW at diagnosis in regard to the overall survival of the symptomatic multiple myeloma patients. Multiple myeloma is part of a disease spectrum called plasma cell dyscrasias.

Method:

We performed a retrospective study on 88 first time multiple myeloma patients. The patients diagnosed for the first time between January 2014 – January 2019 were selected. The patients were divided into two groups, based on the pretreatment RDW value, into normal-RDW group (≤14%) and high-RDW group (>14%). Between the two groups, patients' characteristics and survival outcomes were compared. Continuous and categorical parameters were analyzed using independent sample *t*-tests and x^2 tests, respectively. The prognostic value of pretreatment RDW level was validated using the Cox proportional hazards model. For survival analysis was used the Kaplan-Meier method with a log-rank test. Overall survival (OS) was defined as the duration from the first treatment to all-cause death. The significant variables with $P < 0.05$ defined in univariate survival analyses (by log-rank test). Differences were considered statistically significant when two-sided *P* values were <0.05.

Results:

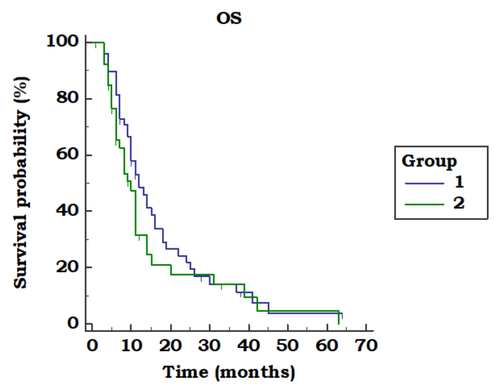
A total of 88 patients were eligible for this study. The median age was 64 (42-81) years, and 47 (53.4%) were male. The mean baseline RDW level was 14.4% (range 9.9-22.0%). Among these, 40 (33%) patients presented an RDW higher than the upper limit of normal range (>14%). The mean RDW values of normal-RDW group and high-RDW group were 12.8% (range, 9.9–14.0%) and 15.7% (range, 14.1–22.0%), respectively. The patients' age between the two groups did not vary much, being 63.5 and 64 years old respectively (*P* <0.0001).

With a median follow up of 10 months (3 to 64 months), the normal-RDW group showed a better overall survival (OS) (12 months) compared to the high-RDW group (10 months). The results were not statistically significant (p=0.2638).

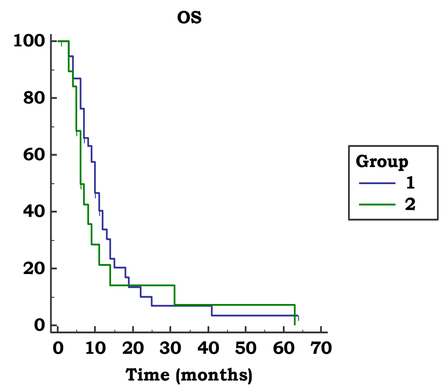
Excluding the effect of anemia on RDW, a subgroup analysis was performed on patients with hemoglobin ≥10g/dL. Patients with RDW higher than 14% showed worse median overall survival (6 months), compared to the normal RDW group (10 months) (*P*=0.2602).

	Total (n=88)	Normal RDW (n=48)	High RDW (n=40)	P
RDW level, mean (range)	14.4 (9.9-22.0)	12.8 (9.9-14.0)	15.7 (14.1-22.0)	<0.0001
Age, mean (range)	64 (42-81)	63.5 (42-81)	64 (48-78)	<0.0001
Sex, female/male	41/47	25/23	16/24	0.2606
Hemoglobin (range)	10.95 (5.9-15.1)	11.2 (7.9-14.5)	9.74 (5.9-15.1)	0.011

Characteristics of the patients according to the pretreatment RDW level.



Overall survival curves according to red blood cell distribution width level at diagnosis in symptomatic multiple myeloma patients. Group 1: RDW<14%; Group 2: RDW≥14%.



Overall survival curves according to red blood cell distribution width level at diagnosis in symptomatic multiple myeloma patients. Group 1: RDW<14%; Group 2: RDW≥14%.

Conclusions:

This study suggests an increased RDW level at diagnosis is associated with a poor overall prognosis in symptomatic multiple myeloma patients. Further meta-analysis studies should be performed before considering RDW as a prognostic marker at diagnosis.

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