Neutrophil-Lymphocyte Ratio and Nutrition Status Are Clinically Useful in Predicting Prognosis in Patients with Colorectal Cancer

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BACKGROUND

Neutrophil-lymphocyte ratio (NLR) and nutritional status may provide an prognostic value in colorectal cancer (CRC). Thus, aim of this study was to evaluate the prognostic value of nutritional status and NLR in patients with CRC.

METHODS

A retrospective analysis was conducted in patients with CRC. The independent variables were body mass index (BMI), weight loss (WL) and NLR. It was considered overall survival (OS) in 5 years old. Kaplan-Meier curves were used, and logistic regression analyses were performed using the Cox proportional hazards model.

RESULTS

TABLE 1. Clinical characteristics of the patients with colorectal cancer in the city of Rio de Janeiro, Brazil (N= 148).

Variables		N	%
Age (years)[a]		62.1	12.8
Sex	Female	71	48.0
	Male	77	52.0
Tumor location	Anal Canal /Anus	7	4.7
	Rectum	50	33.8
	Colon	91	61.5
Histological type	Adenocarcinoma	144	97.3
	Carcinoma	4	2.7
Level of differentiation	Well differentiated	4	2.7
	Moderately differentiated	128	86.5
	Poorly differentiated	11	7.4
	Undifferentiated mucinous	1	0.7
	UN	4	2.7
Staging	I/II	13	8.8
	III/IV	106	71.6
	UN	29	19.6
BMI classification	Undernourished/Low weight	28	18.9
	Eutrophy	56	37.9
	Overweight/Obesity	64	43.2
WL classification	No loss	22	14.9
	Significant loss	33	22.3
	Severe loss	40	27.0
	UN	53	35.8
NLR ≥3	Yes	67	45.3
	No	81	54.7

Note: BMI= body mass index; N= number of observations; NLR= neutrophil-to-lymphocyte ratio; UN= uninformed; WL= weight loss; %= frequency.
[a]Mean/standard deviation;[b]Median/minimum and maximum.

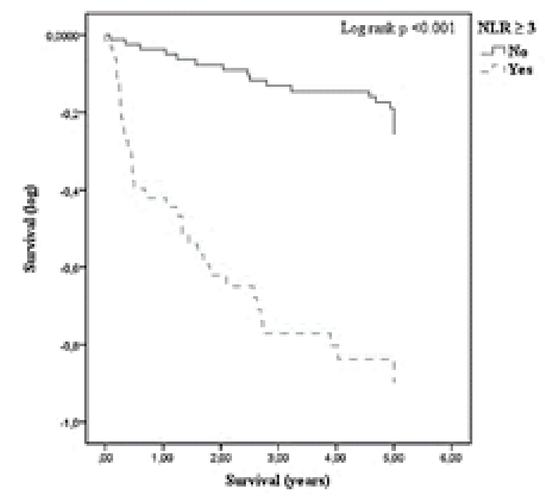

FIGURE 1. Kaplan-Meier plots quantifying the effects of NLR status on the overall survival in patients with CRC.
Note: NLR= neutrophil-to-lymphocyte ratio.

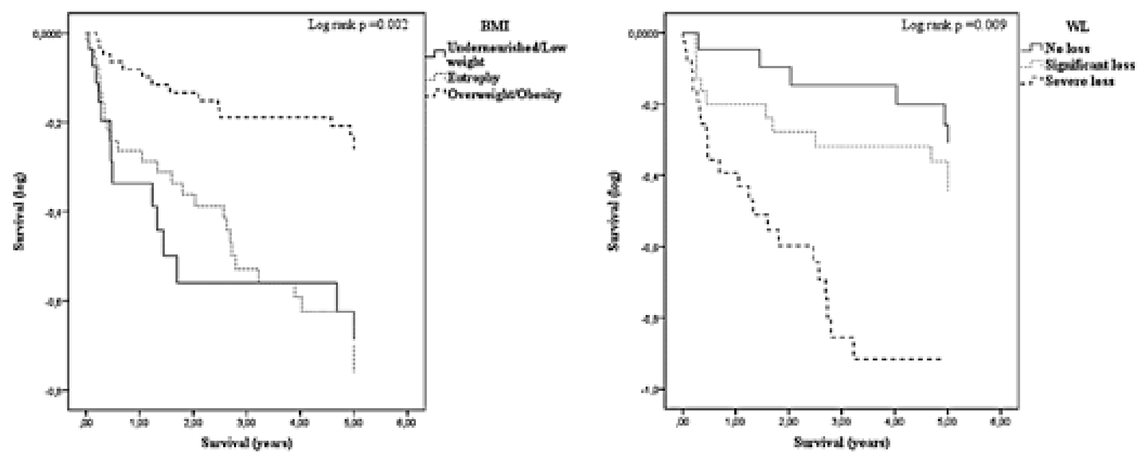

FIGURE 2. Kaplan-Meier plots quantifying the effects of BMI and WL status on the overall survival in patients with CRC.
Note: BMI= body mass index; WL= weight loss.

TABLE 2. Univariate and multivariate analyses of overall survival in patients with colorectal cancer.

Independent variables		N	Multivariate analysis HR	95% CI Lower	95% CI Upper	*p*-value
Age (years)[a]	<62	66	1.00	-	-	-
	≥62	82	0.988	0.504	1.936	0.972
Tumor location	Anal Canal /Anus	7	1.00	-	-	-
	Rectum	50	0.599	0.124	2.891	0.524
	Colon	91	0.319	0.073	1.404	0.131
Level of differentiation	Well/Moderately	132	1.00	-	-	-
	Little/UN	12	1.197	0.405	3.537	0.745
BMI classification	Undernourished/low weight	28	0.579	0.253	1.323	0.185
	Eutrophy	56	1.00	-	-	-
	Overweight/Obesity	64	0.260	0.106	0.639	**0.003***
WL classification	No loss	22	0.367	0.141	0.954	**0.040***
	Significant loss	33	1.225	0.539	2.782	0.629
	Severe loss	40	1.00	-	-	-
NLR ≥3	Yes	67	3.639	1.708	7.771	**0.001***
	No	81	-	-	-	-

Note: BMI= body mass index; N= number of observations; NLR= neutrophil-to-lymphocyte ratio; UN= uninformed; WL= weight loss; %= frequency.
[a]Mean/standard deviation;[b]Median/minimum and maximum.

CONCLUSION

NLR, WL, BMI assessments are promising prognostic indicators in CRC.

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