The Impact of Body Mass Index on Endometrioid Endometrial Carcinoma Prognosis

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INTRODUCTION

Endometrial cancer is the fifth most commonly diagnosed cancer among women worldwide and is classified into two subtypes of tumors with different clinicopathological features and prognosis. Endometriod endometrial carcinoma (EEC) is the most frequent subtype, is often diagnosed in early stages and present a favorable prognosis. Obesity is considered a major risk factor for EEC carcinogenesis. Several studies have described association between obesity and EEC incidence, but with no survival analysis. A recent systematic review showed controversial results concerning the role of obesity on prognosis. Therefore, the aim of this study was to analyze the impact of body mass index (BMI) in disease-free survival (DFS) and overall survival (OS) in women diagnosed with EEC.

METHODS

A database of EEC cases was created, comprising patients who underwent surgical treatment at Brazilian National Cancer Institute between January, 2000 and December, 2011. Clinicopathological features were collected from medical records for exploratory analysis of the variables distribution. Nutritional status were separated on euthrofic, overweight and three obesity grades, according to BMI criteria. Univariate and multivariate DFS and OS were calculated by Kaplan-Meier method and Cox Regression, respectively. Variables were considered statistical significant when $p<0.05$

RESULTS

849 women with EEC were included. Mean age was 63.58 years-old. Mean BMI was 31.83 at time of diagnosis and 83.2% patients were obese or had overweight. Patients were followed for an average of 34.97 months (table 1).

Table 1: Descriptive analysis of assessed population, according to nutritional status (n=849)

Variables	Nutritional Status at Time of EEC Diagnosis n (%)*					
	Eutrophia n=143 (16.8%)	Overweight n=262 (30.9%)	Obesity Grade I n=205 (24.1%)	Obesity Grade II n=122 (14.4%)	Obesity Grade III n=117 (13.8%)	Total
Time of Treatment						
2000 a 2005	59 (41.3%)	104 (39.7%)	87 (42.4%)	35 (28.7%)	43 (36.8%)	328 (38.6%)
2006 a 2011	84 (58.7%)	158 (60.3%)	118 (57.6%)	87 (71.3%)	74 (63.2%)	521 (61.4%)
Age						
< 65	80 (55.9%)	139 (53.1%)	116 (56.6%)	74 (60.7%)	77 (65.8%)	486 (57.2%)
≥65	63 (44.1%)	123 (46.9%)	89 (43.4%)	48 (39.3%)	40 (34.2%)	363 (42.8%)
Diabetes						
No	121 (85.8%)	191 (73.2%)	137 (66.8%)	88 (72.1%)	77 (65.8%)	614 (72.6%)
Yes	20 (14.2%)	70 (26.8%)	68 (33.2%)	34 (27.9%)	40 (34.2%)	232 (27.4%)
Cardiopathy						
No	132 (94.3%)	234 (89.7%)	190 (92.7%)	109(89.3%)	105(91.3%)	770 (91.3%)
Yes	8 (5.7%)	27 (10.3%)	15 (7.3%)	13 (10.7%)	10 (8.7%)	73 (8.7%)
Hipertension						
No	69 (48.6%)	87 (33.2%)	51 (24.9%)	21 (17.2%)	15 (12.8%)	243 (28.7%)
Yes	73 (51.4%)	175 (66.8%)	154 (75.1%)	101(82.8%)	102(87.2%)	605 (71.3%)
Menarche age						
≤ 11 anos	22 (22.7%)	41 (20.3%)	48 (29.8%)	28 (31.5%)	28 (28.0%)	167 (25.7%)
> 11anos	75 (77.3%)	161 (79.7%)	113 (70.2%)	61 (68.5%)	72 (72.0%)	482 (74.3%)
Menopause age						
≤ 45 anos	15 (17.4%)	30 (16.7%)	27 (20.5%)	12 (15.8%)	14 (16.7%)	98 (17.6%)
> 45 anos	71 (82.6%)	150 (83.3%)	105 (79.5%)	64 (84.2%)	70 (83.3%)	460 (82.4%)
Pre-menopause						
Não	92 (89.3%)	193 (91.5%)	144 (86.2%)	79 (84.9%)	88 (89.8%)	596 (88.7%)
Sim	11 (10.7%)	18 (8.5%)	23 (13.8%)	14 (15.1%)	10 (10.2%)	76 (11.3%)
FIGO Staging						
I e II	100 (70.4%)	217 (82.8%)	177 (86.3%)	112(91.8%)	107(92.2%)	713 (84.2%)
III e IV	42 (29.6%)	45 (17.2%)	28 (13.7%)	10 (8.2%)	9 (7.8%)	134 (15.8%)
Tumor Grade						
1 e 2	95 (66.9%)	215 (82.1%)	164 (81.6%)	98 (81.0%)	98 (83.8%)	670 (79.5%)
3	47 (33.1%)	47 (17.9%)	37 (18.4%)	23 (19.0%)	23 (19.0%)	173 (20.5%)

* Differences in absolute values correspond to absence of information (missing values)

There were 111 recurrences (13.1%) with mean DFS of 51.90 months and 140 deaths (16.5%) were registered (mean OS of 52.25 months). No difference on DFS and OS was observed, considering univariate and multivariate analyses, among all groups, according to nutritional status (tables 2 and 3).

Table 2: Disease-Free Survival and Overall Survival Analysis by Kaplan Meier Method, according to nutritional status (n=849)

Nutritional Status	Disease-Free Survival			
	Events (%)	Mean	CI 95% (min - max)	Log Rank
Eutrophia	22 (15.4%)	51.90	48.77 – 55.04	
Overweight	38 (14.5%)	52.73	50.53 – 54.93	
Obesity Grade I	22 (10.7%)	55.08	52.93 – 57.23	0.666
Obesity Grade II	16 (13.1%)	53.36	50.38 – 56.35	
Obesity Grade III	13 (11.1%)	54.01	50.79 – 57.22	
Total	111 (13.1%)	53.65	52.46 – 54.84	

Nutritional Status	Overall Survival			
	Events (%)	Mean	CI 95% (min - max)	Log Rank
Eutrophia	27 (18.9%)	50.64	47.43 – 53.85	
Overweight	45 (17.2%)	51.85	49.61 – 54.09	
Obesity Grade I	35 (17.1%)	52.56	50.10 – 55.02	0.833
Obesity Grade II	16 13.1%)	53.82	50.99 – 56.66	
Obesity Grade III	17 (14.5%)	52.97	49.67 – 56.28	
Total	140 (16.5%)	52.25	51.04 – 53.47	

Table 3: Disease-Free Survival and Overall Survival Analysis by Cox Regression, according to nutritional status (n=849)

Nutritional Status	Disease-Free Survival		
	HR	CI 95% (min - max)	p value
Eutrophia	Reference		
Overweight	0.987	0.584 – 1.668	0.960
Obesity Grade I	0.683	0.378 –1.234	0.207
Obesity Grade II	0.873	0.458 – 1.663	0.679
Obesity Grade III	0.808	0.407 – 1.604	0.542
Nutritional Status	**Overall Survival**		
	HR	CI 95% (min - max)	p value
Eutrophia	Reference		
Overweight	0.961	0.596 – 1.549	0.870
Obesity Grade I	0.895	0.541 – 1.478	0.664
Obesity Grade II	0.710	0.383 – 1.318	0.278
Obesity Grade III	0.847	0.462 – 1.555	0.592

There was no difference on DFS and OS curves related to BMI classification. Regarding OS, there was no statistically significant difference related to BMI at time of diagnosis of EEC.

Overall Survival

Disease-Free Survival
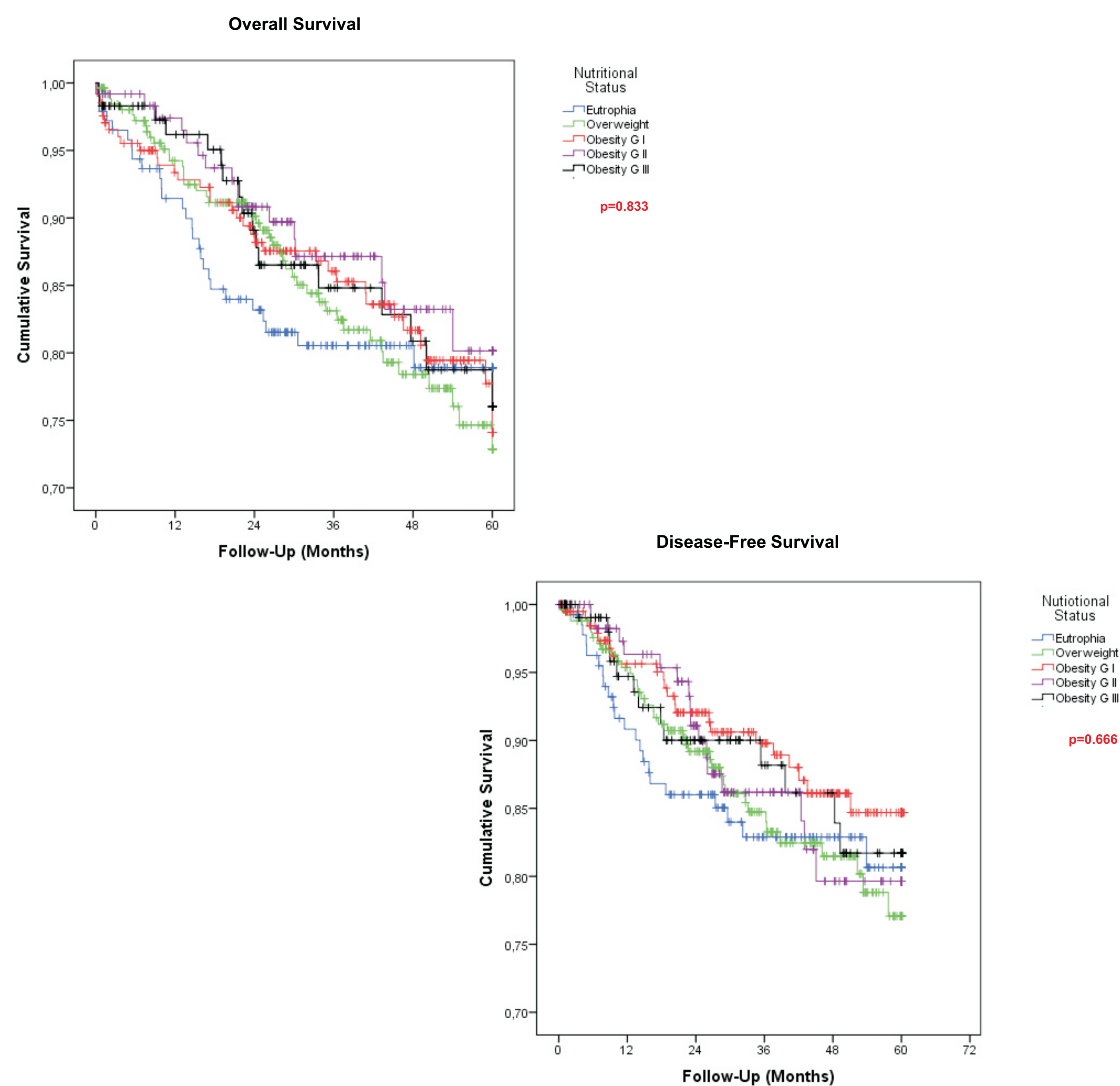
CONCLUSION

Overweight and obesity had no impact on EEC prognosis on the assessed cohort.

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