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Patient Generated Subjective Global Assessment as a prognosis tool in women with gynecologic cancer

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ABSTRACT

Objectives: The aim of this study was to assess the nutritional status (NS) of women hospitalized for gynecologic tumors and relate it to such outcomes as hospital length of stay and 1-y mortality.
Methods: We assessed 146 women diagnosed with gynecologic tumors who were admitted to a referral oncologic hospital in November 2012. Data collected included medical history, duration and reason for admission, and cases of death within 1 y.
Results: NS was assessed using Patient-Generated Subjective Global Assessment (PG-SGA). The receiver operating characteristic curve was used to define the best cutoff point for discriminating individuals who did or did not die. We used proportional hazards regression to assess associations between malnutrition and 1-y mortality. According to the PG-SGA, 62.4% of the women were classified as being at nutritional risk or having moderate or severe malnutrition. Sorting patients by stage of cancer, there was no statistical difference in NS classification according to the different cancer sites. The median hospital stay, in days, was statistically lower in patients classified as well nourished. Individuals with a score above the cutoff point of 10 were 30.7 times more likely (95% confidence interval, 11.8–79.4) to die. There was a 52.1% rate of mortality within 1 y. Patients classed as having some degree of malnutrition had a significantly lower median survival rate. A diagnosis of cervical cancer and severe malnourishment increases the likelihood of death.
Conclusions: Our findings suggest that the PG-SGA can be considered not just as an indicator of nutritional risk, but also as a major predictor of prognosis and mortality in this population.

Introduction

More than 190,000 women are diagnosed with gynecologic cancer in Brazil each year [1]. On a global scale, cervical cancer remains the second most common malignancy and the second highest cause of cancer-related death in women. Reports estimate that there are ~500,000 new cases of cervical cancer diagnosed each year. Most of these new cases occur in developing countries, and 70% are diagnosed at an advanced stage [2]. Although less incident, ovarian cancer is the most fatal gynecologic cancer, with a 44% 5-y survival rate despite efforts to improve early detection and treatment [3]. Conversely, most endometrial cancers are diagnosed at an early stage (75%), and the reported survival rate is 75% [4].

Compromised nutritional status (NS) is common among patients with cancer and is associated with hindered treatment response, greater need for hospitalization, lower quality of life, and less chance of survival. Such complications are responsible for ~20% of cancer-related deaths [5,6].

Nutritional assessment should be considered part of routine treatment as it is the first step in identifying and treating malnutrition [7]. The Patient-Generated Subjective Global Assessment (PG-SGA) is an easily applied method of nutritional assessment, which was adapted from Subjective Global Assessment (SGA) and developed specifically for patients with cancer. Additionally, it has been considered useful for detecting nutritional risk and malnutrition in patients with gynecologic cancer [6].

The authors have no conflicts of interest to declare.

CSR and MSL collected data and carried out statistical analysis. GVC conceived of and coordinated the study. All authors contributed to the writing and reviewing of the paper and approved the final version.

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The PG-SGA is based on a combination of known prognostic indicators, such as weight loss and performance status, as well as clinical aspects of dietary intake and nutrition impact symptoms [8]. In addition to classifying NS, the form incorporates a numerical score, whereby the higher the score the greater the risk for malnutrition [6,9,10].

Several studies have been published addressing the subject of PG-SGA and cancer, but few have included the specific population of patients with gynecologic tumors, nor have they focused on such aspects as tumor sites, staging, or the effect NS has on patient survival. Thus, the aim of this study was to assess the NS of women hospitalized with gynecologic tumors and its relationship to such outcomes as hospital length of stay (LOS) and 1-y mortality.

Methods

Study cohort

The sample group took part in a multicenter study entitled Inquérito Nutricional de Câncer no Brasil (Nutritional Survey of Cancer In Brazil). The aim of the survey was to employ the PG-SGA at a national level to asses the NS of patients with cancer admitted to 45 participating institutions in November 2012. The study group was composed of women histopathologically shown to have gynecologic tumors who were hospitalized at Rio de Janeiro's foremost centers for the prevention and treatment of cancer. All the women were followed over 12 mo or until death.

Women without proven histopathologic diagnoses (n = 9), with past history of another kind of neoplasm (n = 18), or those shown to have benign tumors (n = 9) were excluded.

To obtain a nutritional diagnosis of the sample group, we used the PG-SGA subjective method for nutritional assessment [8], previously validated for the Portuguese language [11]. The tool was employed during the first 24 h of hospitalization by two trained clinical nutritionists. The scored PG-SGA consisted of two sections. The first included questions on weight history, food intake, symptoms, and functional capacity; the second contained data on metabolic stress and physical assessment. On completion of the assessment, patients were subjectively categorized as well nourished (A), moderately malnourished or suspected malnourishment (B), or severely malnourished (C). We then recorded the PG-SGA score.

Data regarding past medical history, age, tumor site, stage and histologic type, duration of, and reason for hospital stay were collected at the time of hospital admission—retrieved from medical records—to create a current patient history. Confirmation of tumor site and tumor weight were obtained through histopathology reports. Cancer stage was classified per Federation of Gynecology and Obstetrics staging [12]. After 1 y, patient status (alive or dead) was checked in institutional databases.

We carried out our research in accordance with the Declaration of Helsinki ethical guidelines and with the approval of the Instituto Nacional de Câncer José de Alencar Gomes da Silva Research Ethics Committee (Research Protocol No. 246.824).

Statistical analysis

The measures of central tendency and dispersion of the continuous variables were calculated. To assess the symmetry of the distribution curve for the variables, a normal Kolmogorov-Smirnov curve was tested. A nonnormal distribution for these variables, except for age, was identified. In describing the sample, the data were expressed in percentages for the categorical variables and in mean or median for the numeric variables, in accordance with their distribution curve.

Multiple comparisons of the numerical variables between the three PG-SGA NS classification groups were carried out by performing Kruskal-Wallis analysis of variance. Bonferroni correction was used to identify which intervals were significantly different for each group. The Mann-Whitney test was used to compare numerical variables between two groups. The associations between categorical variables were analyzed by using either the χ^2 test or Fisher's exact test. Receiver operating characteristic (ROC) curve analysis was used to determine the predictive value of the PG-SGA score for mortality.

Overall survival (OS) was measured from the first day of hospitalization to the date of death, and those who remained alive after 1 y were censored. Kaplan-Meier method was used to estimate the probability of OS. Log-rank tests were used for the comparison of survival curves between the three NS classes generated using the PG-SGA. A Cox proportional hazard model was used to examine the association between each covariate and survival in univariate analysis. Hazard ratios between each group and the reference group for categorical variables, and for each unit of increase for continuous variables, were reported with 95% confidence intervals (CIs) and two-tailed P values. Covariates included in univariate analysis were age, cancer site and stage, NS categorized by PG-SGA as A (well nourished), B (moderately malnourished), or C (severely malnourished), scored PG-SGA (as a continuous variable), and reason for admission to hospital. Variables of interest were defined as $P < 0.25$ in univariate analysis and were included in multivariate analysis using Cox proportional hazard models. $P = 0.05$ was considered statistically significant in multivariate analysis.

All reported P values were two-tailed. Statistical significance was set at $P < 0.05$ and analyses were conducted using SPSS statistical software (version 20, SPSS, Chicago, IL, USA).

Results

The study population comprised 146 patients, with an average age of 55.3 ± 14.9 y. Regarding the nutritional diagnosis obtained using the PG-SGA tool, 62.4% of the women were classified with moderate or severe malnutrition, as shown in Table 1 along with their other clinical characteristics.

Patients with endometrial tumors were more often classified as being well nourished, and those with ovarian tumors were found to have the greatest degree of alteration in NS (PG-SGA B or C). Nevertheless, sorting patients by stage of cancer, there was no statistical difference in NS classification according to the different cancer sites, showing that the NS of the patients evaluated shared the same distribution pattern in different sites when the effect of stage of disease was not considered (Fig. 1).

The median hospital LOS, in days, was statistically lower (Kruskall-Wallis test; $P = 0.002$) in the patients classified as PG-SGA A (7 d; 2–17 d range) in relation to those who were PG-SGA

Table 1
Frequency of the general characteristics of the population (N = 146)

Character	N	%
Tumor site		
Cervix	85	58.2
Endometrium	35	24
Ovary	26	17.8
Histologic type		
Squamous cell carcinoma	67	45.9
Adenocarcinoma	63	43.2
Sarcoma	9	6.2
Others	7	4.8
Stage		
I	46	31.5
II	28	19.2
III	49	33.5
IV	23	15.8
Comorbidities		
None	80	54.8
DM	3	2.1
HTN	47	32.2
DM + HTN	11	7.5
Others	5	3.5
Reason for hospitalization		
Preoperative	46	31.5
Complications stemming from clinical or surgical treatment*	15	10.3
Illness-related complications†	83	56.8
PG-SGA		
A	55	37.7
B	68	46.6
C	23	15.8

DM, diabetes mellitus; HTN, hypertension; PG-SGA, Patient-Generated Subjective Global Assessment

* Fistulae, actinic cystitis, or febrile neutropenia.

† Kidney failure, deep vein thrombosis, general decline in medical condition, disorientation, infection, bowel obstruction, bleeding, pain, shortness of breath, nausea, and vomiting.