

RESEARCH ARTICLE

Utilization of a Scored Patient-Generated Subjective Global Assessment in Detecting a Malnourished Status in Gynecologic Cancer Patients

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Abstract

Purpose: To assess the prevalence of malnutrition in gynecologic cancer patients using the Scored Patient-Generated Subjective Global Assessment (PG-SGA) questionnaire. **Materials and Methods:** A total of 97 gynecologic cancer patients who never had any treatment but were planned for surgery were enrolled. The patients were asked to complete the scored PG-SGA form before the treatment was started. Attending physicians were also asked to complete other information in the PG-SGA form. Total scores were calculated and the patients were classified into 3 nutritional status levels. **Results:** Mean age was 54 years. Postoperative diagnoses were endometrial cancer in 42 cases (43.2%), ovarian cancer in 29 cases (29.9%), and cervical cancer in 26 cases (26.8%). Mean PG-SGA score was 5.2±4.7. Malnutrition (PG-SGA B and C) was found in 52 patients (53.6%, 95% CI 43.7% - 63.2%). Preoperative BMI, hemoglobin, serum albumin, and cancer stage were not significantly associated with nutritional status. Malnutrition was significantly more common among patients diagnosed with ovarian cancer, compared to other types of cancer (79.3% vs. 42.6%, p 0.004). **Conclusions:** Prevalence of malnutrition among gynecologic cancer patients was 53.5%, according to the scored PG-SGA. Malnutrition was significantly more common among patients with ovarian cancer.

Keywords: malnutrition - scored PG-SGA - gynecologic cancer

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Introduction

Cancer is a major public health problem that leads to morbidity and mortality. The burden of disease has affected the quality of life in Thai people since 1998. From cancer annual statistics in Thailand in 2012, the estimated number of new cancer patients was more than 100,000 (0.18%) and people who died from cancer was 85,000. Cancer is the most common cause of death and the number is gradually increasing (Vatanasapt, 2002). In Thai female population, the most common cancer goes to cervical cancer followed by breast, liver and bile duct, bronchus and lung, colon and rectum, and ovarian cancer (Sarikapan, 2009). Furthermore, over twenty percent of those patients deceased from malnutrition (Bauer, 2002). Thus, gynecologic cancer is the one of the common cause of cancer in Thailand

Although the etiology of an imbalance nutritional status, malnutrition, is multifactorial, there are only two major culprits leading to this tragedy. The primary cause results from inadequate or poor-quality food intake, while the secondary cause results from disease itself that alters food intake or nutrient requirements, metabolism, or

absorption (Van Cutsem, 2005). The effect of malnutrition is immunodeficiency, abnormal muscle function, poor quality of life and treatment response, including side effects and severity of chemotherapy, and short survival length (Longo, 2012). Early detection of high risk malnutrition and nutritional intervention can minimize countless complications and improve the quality of life (Rodrigues CS and Chaves, 2015).

Nowadays, there are many optional tools evaluating nutritional status, for example, Subjective Global Assessment (SGA), Patient-Generated Subjective Global Assessment (PG-SGA) and scored Patient-Generated Subjective Global Assessment (PG-SGA). The PG-SGA which adapted from the SGA, and the scored PG-SGA is numerically scored by using the PG-SGA and characterized from severity into three categories (Laky et al., 2007; Laky et al., 2008). The Oncology Nutrition Dietetic Practice Group of the American Dietetic Association has accepted The scored PG-SGA as the standard tool for nutrition assessment for patients with cancer (Laky, 2008).

The aim of this study is to evaluate the use of the scored PG-SGA as a nutrition assessment tool in hospital

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gynecologic cancer patients to diagnose and classify stage of malnutrition. Furthermore, this study intends to find out the relationship between malnutrition, location of cancer, stage of disease, and patient characteristics like co-morbidities, body mass index (BMI), serum albumin, and serum hemoglobin.

Materials and Methods

The cross-sectional study was conducted from April 2105- April 2016 at the Siriraj Pre-anesthesia Assessment Center (SiPAC) of Department of Obstetrics and Gynaecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand.

The patients enrolled in this study were all aged 18 to 80, diagnosed gynecologic cancer or highly suspected ovarian cancer, and planned to undergo surgery. At Pre-anesthesia Assessment Center, the patients were verbally informed prior participation. Patients who had received any treatment (chemotherapy, radiation or surgery) or had any disease that affected nutrition were excluded. The original scored PG-SGA form, which get the permission of using this tool for detection malnutrition from the copyright owner was completed by patient. This form was translated from English to Thai language by expert of Research Institute for Languages and Cultures of Asia, Mahidol University. The participants gave informed written consent and completed the scored PG-SGA before commencing treatment. Patients' physical examination and clinical and demographic data, including age at study entry, body weight, height, co-morbidities, serum hemoglobin, serum albumin, and histopathological diagnosis and staging according to the International Federation of Gynecology and Obstetrics (FIGO) were recorded prospectively by five doctors.

The primary objective of this study is the prevalence of malnourish condition among gynecologic cancer patient by using PG-SGA score. While, the secondary objective intends to find out the association between malnutrition and location of cancer, stage of disease, patients' co-morbidities, body mass index (BMI), serum albumin, and serum hemoglobin.

Data were collected and analyzed using SPSS Statistics version 18 (PASW Statistics). According to total score of PG-SGA, the patients was classified as well-nourished (score < 4 or PG-SGA A), moderately or suspected of being malnourished (score 4-8 or PG-SGA B) or severely malnourished (score >8 or PG-SGA C). Prevalence of malnutrition in gynecologic cancer patients were expressed with percent and 95% confidence interval (CI). Pearson chi-square test was used to compare categorical data including diagnosis and staging. Quantitative variable was analyzed with Mann-Whitney U or 2-sample t-test.

Results

Patient characteristics

Mean age of ninety-seven patients was 54 years. Overall, thirty-six (37%) patients had normal BMI while twenty patients (20.6%) were obese. Almost one quarter of those patients have hypertension as the co-

morbidity. Postoperatively, forty-two patients (43.2%) were diagnosed endometrium cancer, twenty-nine patients (29.9%) were diagnosed ovarian cancer, and twenty-six (26.8%) were diagnosed cervical cancer. Sixty patients had histologically proven early stage cancer. As expected, all of cervical cancer patients presented with early stage, whereas of whom, diagnosed with ovarian cancer presented with early as well as late stage. Mean serum hemoglobin was 12 g/dl, while forty percent of patients were diagnosed anemia. Mean serum albumin was 4.1 g/dl, which the minority of those experienced hypoalbuminemia (Table 1).

PG-SGA score

Mean PG-SGA score was 5.2. Almost half of the cases were categorized into PG-SGA B and C, malnourished, which twenty-one percent of those were severely malnourished (Table 2). Nevertheless, preoperative BMI, serum hemoglobin, serum albumin and stage of cancer were not significantly associated with nutritional

Table 1. Demographic and Clinical Characteristics in Gynecologic Cancer Patients

Characteristics	N(%)
Age(years)	54.3 ± 11.6
BMI(kg/m ²)	27.1 ± 13.6
Normal range (<23)	36 (37.1)
Overweight (23-29.9)	41 (42.3)
Obese (≥30)	20 (20.6)
Co-morbidities	
CVS	5 (5.2)
RS	2 (2)
DM	12 (12.3)
HT	25 (25.7)
Type of cancer	
CA cervix	26 (26.8)
Early	26 (100)
Late	0
CA endometrium	42 (43.2)
Early	24 (57.1)
Late	18 (42.9)
CA ovary	29 (29.9)
Early	12 (41.4)
Late	17 (58.6)
Stage	
Early	60 (61.9)
Late	37 (38.1)
Hb (g/dl)	12 ± 1.5
Anemia	41 (41.4)
Albumin (g/dl)	4.2 ± 0.4
Hypoalbuminemia	3 (3)

BMI, body mass index; CVS, cardiovascular disease; RS, respiratory disease; DM, diabetes mellitus; HT, hypertension; CA, cancer; Hb, hemoglobin

Table 2. Patient Nutritional Level According to PG-SGA Classification

Characteristics	N(%)
Scores	5.2 ± 4.7
Well-nourished	
Category A	45(46.4)
Malnourished	
Category B	31(31.9)
Category C	21(21.6)

Table 3. Association between Malnutrition and Location of Cancer, Stage of Disease, Patient Co Morbidities, Body Mass Index (BMI), Serum Albumin, and Serum Hemoglobin (N=52)

Characteristics	Malnourished, N (%)	p-value
Type		0.004
CA cervix	11 (21.2)	
CA corpus	18 (34.6)	
CA ovary	23 (44.2)	
Stage		0.206
Early stage	30 (57.7)	
Late stage	22 (42.3)	
BMI		0.521
Normal range	22 (42.3)	
Overweight	20 (38.5)	
Obese	10 (19.2)	
Anemia		0.579
Hb \geq 12 g/dl	30 (57.7)	
Hb <12 g/dl	22 (42.3)	
Hypoalbuminemia		0.15
Albumin \geq 4g/dl	49 (94.2)	
Albumin < 4g/dl	3 (5.8)	

Table 4. Association between stage and type and malnourished status in gynecologic cancer patients (N=52)

Characteristics	Malnourished, (%)	p-value
Stage and type		
Early		0.642
CA cervix	11 (42.3)	
CA corpus	12 (50)	
CA ovary	7 (58.3)	
Late		0.051
CA corpus	6 (33.3)	
CA ovary	16 (94.1)	

status. Type of cancer, the patients who were diagnosed ovarian cancer were statistically significant malnourished (79.3%, p 0.004). There was approximately four in ten of endometrial and cervical cancer experienced malnourished, 42.9 and 42.3 respectively (Table 3). In view of comparing stage and type of cancer with malnutrition, ninety-four percent of late stage ovarian cancer patients were malnutrition (Table 4).

Discussion

Malnutrition is very common and costs problem in cancer patients worldwide that causes negative effect to the response of treatment and quality of life. There were 85% cancer patients who suffered from malnutrition and its consequences (Argiles, 2005; von Meyenfeldt, 2005; Longo et al., 2011; Santarpia et al., 2011). Many factors make it underestimated and delayed to be treated. Although there are various tools such as Subjective Global Assessment (SGA), Patient-Generated Subjective Global Assessment (PG-SGA) and scored Patient-Generated Subjective Global Assessment (PG-SGA), there is still no obvious gold standard for assessment nutritional status in cancer patients. This may be the cause of difficulty in comparing between the studies.

This study assessed the prevalence of nutritional status in gynecologic cancer patients by using scored PG-SGA.

Half of the patients were found to have malnourished status and most of them were diagnosed ovarian cancer. Though endometrial and cervical cancer were less likely to present malnourished at initial diagnosis, half of these early stage groups had malnutrition. Thus, early stage patients should be concerned about the nutrition. Laky and colleagues from Australia found that only 24% of cancer patients had malnourished detecting by scored PG-SGA (Laky et al., 2008). Although the progression of medical knowledge and technology has emerged for years, there are still many nutritional problems in Thailand. The high prevalence of malnutrition in this study may be because of the high prevalence of preexisting poor nutritional status and also the late stages at diagnosis. Recently, Ju HN, et al. documented 53.5% of gynecologic cancer patients were diagnosed as severe malnutrition according to scored PG-SGA (Nho et al., 2014), consistent with this study.

As we know, patients with ovarian cancer commonly have malnutrition as well as malignancy of gastrointestinal tract does, because of the metabolic effects of the enlarging tumor masses, bowel obstruction and also a high resting energy expenditure caused by increasing in cytokines that comply with our results (Kumar, 2012; Rodrigues and Chaves, 2015). Most ovarian cancer patients always come with late stage since the obscure symptom and loss of annually check-up. The prevalence of malnourished ovarian cancer patients in this study was about the same as the previous study but using scored PG-SGA instead of SGA (Laky et al., 2008).

Endometrial cancer, the first most common gynecologic cancer in the United states (Jemal et al., 2005; Jamison et al., 2013) and third in Thailand (Sarikapan, 2009). Fortunately, most of these patients come with early stage at first diagnosis, making them undergo early treatment and have satisfied prognosis (Tangjitgamol et al., 2009). According to Laky B, et al study, only six percent of endometrial cancer patients was classified as malnourished detecting by SGA (Laky et al., 2008). Nevertheless, our study found that almost half of these patients have malnutrition by using score PG-SGA. This apparently different outcome may be because of the different in assessment tool, socioeconomic status, and race.

In the earlier published studies, many parameters like age, BMI, serum hemoglobin, and serum albumin were significantly associated with nutritional status (Laky et al., 2007; Laky et al., 2008; Das et al., 2014). In contrast, our study found that none of them including stage could predict the patient's nutritional status except type of cancer.

In conclusion, This study was the first study surveying the prevalence of malnourished condition in gynecologic cancer patients in Thailand. The scored PG-SGA is a good practicable and the most appropriate tool to evaluate nutritional status in cancer patient with less time, less cost, easy to use and more accurate by patient involvement-identification and empowerment (Zhang et al., 2014). The high number of prevalence of malnourished make us realize that there are still many Thai patients that need to be treated and improve nutrition. There are many factors confounding this finding especially the emotional stress, when the patients know their diagnosis, making them loss

of appetite and energy for doing daily life activities. In the future, the subsequent studies should focus not only on ovarian cancer patients that were the highest number of malnourished and have the most impact in quality of life but also further intervention or management for applying the score PG-SGA in gynecologic cancer patients (Laky et al., 2010). Early detection and intervention can minimize many complications. The numerical PG-SGA score can triage the patients for appropriate medical nutrition therapy and pharmacologic intervention.

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References

- Argiles JM (2005). Cancer-associated malnutrition. *Eur J Oncol Nurs*, **9**, 39-50.
- Bauer J, Capra S, Ferguson M (2002). Use of the scored Patient-Generated Subjective Global Assessment (PG-SGA) as a nutrition assessment tool in patients with cancer. *Eur J Clin Nutr*, **56**, 779-85.
- Das U, Patel S, Dave K, Bhansali R (2014). Assessment of nutritional status of gynecological cancer cases in India and comparison of subjective and objective nutrition assessment parameters. *South Asian J Cancer*, **3**, 38-42.
- Jamison PM, Noone AM, Ries LA, Lee NC, Edwards BK (2013). Trends in endometrial cancer incidence by race and histology with a correction for the prevalence of hysterectomy, SEER 1992 to 2008. *Cancer Epidemiol Biomarkers Prev*, **22**, 233-41.
- Jemal A, Murray T, Ward E, et al (2005). Cancer statistics, 2005. *CA Cancer J Clin*, **55**, 10-30.
- Laky B, Janda M, Bauer J, et al (2007). Malnutrition among gynaecological cancer patients. *Eur J Clin Nutr*, **61**, 642-6.
- Laky B, Janda M, Cleghorn G, Obermair A (2008). Comparison of different nutritional assessments and body-composition measurements in detecting malnutrition among gynecologic cancer patients. *Am J Clin Nutr*, **87**, 1678-85.
- Laky B, Janda M, Kondalsamy-Chennakesavan S, Cleghorn G, Obermair A (2010). Pretreatment malnutrition and quality of life - association with prolonged length of hospital stay among patients with gynecological cancer: a cohort study. *BMC Cancer*, **10**, 232.
- Longo DL, Fauci AS, Kasper DL, et al (2012). Harrison's principles of internal medicine. 18th ed. New York: Mcgraw-Hill.
- Nho JH, Kim SR, Kwon YS (2014). Depression and appetite: predictors of malnutrition in gynecologic cancer. *Support Care Cancer*, **22**, 3081-8.
- Rodrigues CS, Chaves GV (2015). Patient-generated Subjective Global Assessment in relation to site, stage of the illness, reason for hospital admission, and mortality in patients with gynecological tumors. *Support Care Cancer*, **23**, 871-9.
- Santarpia L, Contaldo F, Pasanisi F (2011). Nutritional screening and early treatment of malnutrition in cancer patients. *J Cachexia Sarcopenia Muscle*, **2**, 27-35.
- Sarikapan W (2009). Epidemiologic report of gynecologic cancer in Thailand. *J Gynecol Oncol*, **20**, 81-3.
- Tangjitgamol S, Anderson BO, See HT, et al (2009). Management of endometrial cancer in Asia: consensus statement from the Asian Oncology Summit 2009. *Lancet Oncol*, **10**, 1119-27.
- Van Cutsem E, Arends J (2005). The causes and consequences of cancer-associated malnutrition. *Eur J Oncol Nurs*, **9**, 51-63.
- Vatanasapt V, Sriamporn S, Vatanasapt P (2002). Cancer control in Thailand. *Jpn J Clin Oncol*, **32**, 82-91.
- von Meyenfeldt M (2005). Cancer-associated malnutrition: an introduction. *Eur J Oncol Nurs*, **9**, S35-8.
- Zhang L, Lu Y, Fang Y (2014). Nutritional status and related factors of patients with advanced gastrointestinal cancer. *Br J Nutr*, **111**, 1239-44.