RESEARCH ARTICLE

Quality of Life by Stage of Cervical Cancer among Malaysian Patients

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Abstract

Stage of cervical cancer may adversely affect the quality of life (QOL) among patients. The objective of this study was to predict the QOL among cervical cancer patients by the stage of their cancer. A cross-sectional study from September 2012 until January 2013 was conducted among cervical cancer patients who completed treatment. All patients completed a interviewer-guided questionnaire comprising four sections: (A) socio-demographic data, (B) medical history, (C) QOL measured by general health status questionnaire (QLQ-30) and (D) cervical cancer specific module CX-24 (EORTC) was used to measured patient's functional, symptom scale and their global health status. Results showed that global health status, emotional functioning and pain score were higher in stage III cervical cancer patients while role functioning was higher in stage I cervical cancer patients. Patients with stage IV cancer have a lower mean score in global health status (adjusted b-22.0, 95 CI% -35.6, -8.49) and emotional functioning (adjusted b -22.5, 95CI% -38.1, -6.69) while stage III had lower mean score in role functioning (adjusted b -14.3, 95CI% -25.4, -3.21) but higher mean score in pain (adjusted b 22.1, 95 CI% 8.56, 35.7). In conclusion, stage III and IV cervical cancers mainly affect the QOL of cervical cancer patients. Focus should be given to these subgroups to help in improving the QOL.

Keywords: Cervical cancer - quality of life - cancer stage - Malaysian patients - EORTC QLQ-C30

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Introduction

In Malaysia, cancer has been reported as the fourth leading cause of death (Malaysia Health Facts, 2010). Meanwhile, cervical cancer was the second most common cancer among women in Peninsular Malaysia in the years 2003-2005. It constituted 10.6% of all female cancers. There a total of 4,057 confirmed cases of cervical cancer, with an age standardized rate (ASR) of 16.1 per 100, 000 women. Chinese women had the highest ASR (23.2) followed by Indians (16.4) and Malays (8.7) (Ministry of Health, 2006).

There is plethora of staging systems for cervical cancer, with the most widely used being formulated by the International Federation of Gynecology and Obstetrics, called the FIGO system, in the late 1950s. Stage I tumor is basically limited to the cervix, as opposed to stage II to IV which extend beyond the cervix. In the whole world, the 2006 FIGO report indicated that 42% of cervical cancer cases are diagnosed at stage I, 30% at stage II, 21% at stage III and 6% at stage IV (Quinn et al., 2006).

Stage of cancer plays an important role in the quality of life (QOL) of the cervical cancer survivors as later stage correlate with the severity of the cancer and treatment opted. A cross-sectional study (Yao Xie et al., 2013) examined the quality of life for the patients with cervical cancer at difference clinical stages reported that the overall QOL of patients with precancerous lesions and early cervical carcinoma were better than patients with advanced cervical cancer. The severity of the disease played an important role in emotional functioning whereby increasing stage of cancer contributed to poorer emotional functioning among the cancer patients (Bradley et al., 2006). Besides that, some studies (Ferrandina et al., 2012; Mantegna et al., 2013) also suggested that QOL and sexual activity differ in early stage and late-stage cervical cancer. However, a study on QOL among the cervical cancer survivors found that the stage of cancer with adjustment of treatment does not give clinical meaningful differences in EORTC QLQ-30 or CX-24 subscales (Park et al., 2007). This finding concurred other studies which showed no significant association between stage of cancer and QOL (Greimer, 2007; Mirabeau-Beale et al., 2009).

In terms of sexual functioning, a few studies showed that sexual functioning had significant association with stage of cancer among the cervical cancer survivors (Quinn et al., 2006; Hsu et al., 2009; Mantegna et al., 2013). Another study also found that tumor stage directly

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affected sexual function in women with gynecologic cancer (Chun, 2008).

This research added value to previous studies since it focused on stage of cervical cancer and QOL. Information on stages of cancer may facilitate the healthcare personnel in providing per-operative counseling to patients about treatments. Understanding the potential problems in QOL of these women post treatment may also help the health care personnel in providing appropriate psycho-oncological care or counseling session for these women. Therefore the main study objective was to predict the QOL among cervical cancer patients by the stages of their cancer.

Materials and Methods

A cross-sectional study from September 2012 until January 2013 was conducted in the Gyne-Onco clinic, Obstetrics and Gynecology Department, Universiti Kebangsaan Malaysian Medical Center (UKMMC).

The sample size was calculated using two proportion Pocock's formula and in reference to study by Sharifah et al(2012) in 122 patients and they were recruited via simple random sampling method based on patients registration list (Pocock, 1983). The inclusion criteria were Malaysian cervical cancer patients who had completed their treatment at the Gyne-Onco Clinic, UKMMC, who understood and were willing to answer the questionnaires. We excluded those patients who had psychiatric illness or who had recurrent cancer.

Study tools

The interviews were conducted in Malay, English and Mandarin Chinese. The interviewer guided the patients to avoid misunderstanding. The questionnaires consist of four sections: Section A, Section B, Section C and Section D.

Section A is designed to provide the socio-demographic and Section B included medical history of the patients. While, Section C is three components which are global health status (GHS)/global QOL, functional score (FC) and symptom score (SC) from QLQ-30. Under the FC component, there are physical functioning, role functioning, emotional functioning, cognitive functioning and social functioning scale whereas the SC include fatigue, nausea and vomiting, pain, dyspnea, constipation, insomnia, appetite loss, diarrhea and financial difficulties.

Meanwhile, Section D consists of two domains which are FC and SC. The FC consists of body image, sexual activity, sexual enjoyment and sexual/vagina functioning. The SC consists of symptom experience, lympheodem, peripheral neuropathy, menopausal symptoms and sexual worry.

The scoring procedure was based on The EORTC-QLQ-C30 Scoring Manual (3rd Edition) which provided by the EORTC Quality of Life Group (Fayers et al., 2001). The QLQ-30 is composed of both multi-item scales and single-item scales. These include five functional scales, three symptom scales, a global health status QOL scales and six single items. Meanwhile the CX-24 also consists of three multi-item scales and five single-item scales. These include four functional scales, one symptom scales and four single items. Each of the multi-item scales includes a different set of items- no item occurs in more than one scale.

For all scales, the raw score (RS) is the mean of the component items: $RS = (I1 + I2 + \ldots + n)/n$

Then, for Functional Scales: $Score = \{1 - (RS - 1)/ range^*\} \times 100$

And for Symptom scales/Global Health Status: $Score = \{(RS - 1)/ range^*\} \times 100$. *range = difference between the maximum possible value and minimum possible value.

All of the scales and single-item measures range from 0 to 100. A high scale score represents a higher response level. Thus, *i*) a high score of functional scale represents a high/healthy level of functioning, *ii*) a high score for global health status/QOL represents a high QOL, but *iii*) a high score for symptoms scale/item represents a high level of symptomatology/problems.

Raw score is calculated by estimating the average of the items which contributed to the scale than transformation is used to standardize the raw score. The scoring approach for the CX-24 is identical in principle for the functional scale and symptoms scale items of QLQ-30.

Statistical analysis

Data were entered, cleaned and analyzed using SPSS 19.0 for Windows (SPSS Inc., 2006). Mean and standard deviation (sd) was used to describe the characteristics of the patients for continuous data, whereas percentage was used for categorical data. One-way ANOVA was conducted to determine the association between stages of cervical cancer and QOL score. Simple and multiple linear regression analyses were further used to determine the predictors for the dependent variables after controlling for potential confounders. All hypotheses involved were two-sided tests p value less than 0.05 was considered statistical significance.

Ethical consideration

Ethical approval was obtained from Research and Ethics Committee of Faculty of Medicine UKM (FF 269 2012) and written consent was obtained from the patients.

Results

Majority of patients were Chinese in which they were more in stage I, II and III while Malays and Indian more in stage I and II (v 1). QLQ-30 showed significant association between stages of cervical cancer and QOL domains. The lowest mean score of global health status (p=0.017) and emotional functioning (p=0.017) was among cervical cancer patients stage IV while for stage III, the patients had lowest mean score for role functioning (p=0.016) and higher mean score for pain (p=0.016). The final prediction model (QLQ-30) (Table 1) (after adjusting for age, ethnic, parity and type of treatment), showed that stage III cervical cancer patients had a reduction of 14 mean score of role functioning and 22 increase mean score in pain. However stage IV had a reduction of 22 mean score in global health status and in emotional functioning compared to others stage.

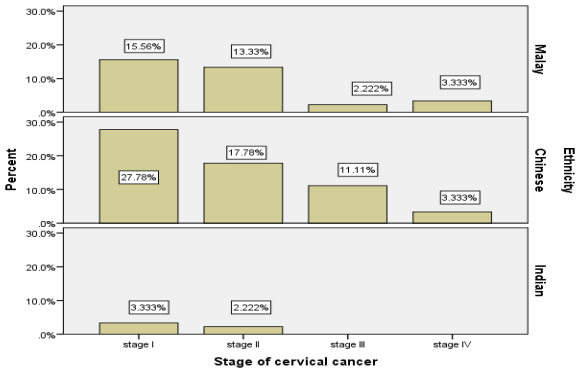

Figure 1. Stage of Cervical Cancer by Ethnicity of Malay, Indian, Chinese

Table 1. Stage of Cervical Cancer as a Predictor in Global Health Sstatus, Role Functioning, Emotional Functional and Pain Score

Outcomes	SLRa		MLRb	
Stage	crude b (95%CI)	p value	adjusted b (95%CI)	p value
Global Health Status[c]				
I	3.50(-3.62, 10.62)	0.332		
II	0.00(-7.58, 7.58)	1.000		
III	4.33(-6.14, 14.80)	0.414		
IV	-22.02(-35.56, -8.49)	0.002	-22.02(-35.56, -8.49)	0.002
Role Functioning[d]				
I	9.47(1.89, 17.06)	0.015		
II	-0.28(-8.58, 8.03)	0.947		
III	-14.32(-25.42, -3.21)	0.012	-14.32(-25.42, -3.21)	0.012
IV	-10.32(-25.8, 5.22)	0.190		
Emotional Functioning[e]				
I	2.25(-5.86, 10.38)	0.582		
II	-1.53(-10.13, 7.08)	0.725		
III	10.20(-1.54, 21.95)	0.088		
IV	-22.52(-38.07, -6.69)	0.005	-22.52(-38.07, -6.69)	0.005
Pain score[f]				
I	-8.33(-17.94, 1.28)	0.088		
II	-8.33(-11.17, 9.51)	0.873		
III	22.11(8.56, -35.67)	0.002	22.11(8.56, -35.67)	0.002
IV	-4.76(-24.28, 14.76)	0.629		

[a]Simple linear regression, [b]Multiple linear regression (adjusted for age, ethnic and parity), [c]R2=0.106, [d]R2=0.069, [e]R2=0.086, [f]R2=0.107. The model reasonably fits well. Model assumptions are met. There are no interaction and multicollinearity problem

Discussion

The significant means difference was found between global health status, role functioning, emotional functioning and symptom of pain with stage of cancer. Farooqi et al. (2013) also stated that stage of cancer was significantly associated with global health status. For global health status or overall QOL, patients with cancer stage I, II and III have higher QOL compared to stage IV. These findings were similar with other studies (Park, 2007; Yao Xie, 2013). According to their studies, stage of cancer had a direct significant negative effect on QOL. However, stage III had highest QOL followed by stage I and II and stage IV had the lowest QOL for global health status. Similarly, study among oncology patients at Penang General Hospital also found that patients at very advanced stages of cancer featured a low QOL (Farooqi et al., 2013). These finding could be clarified by early detection that enhance the chances of curing cancer and survival which indirectly influence the QOL of cancer patients and better QOL can be offered (Sharifa Ezat et al., 2012).

Whereas other studies done however, showed no significant different between stage of cancer and QOL (Greimer, 2007; Kobayashi et al., 2009; Mirabeau-Beale, 2009). Study among cancer patients receiving treatment in Malaysia also found that stage of cancer does not show any significant difference with quality of life (physical component) (Sharifa Ezat et al., 2014). Also, there was study found that there is no differences in QOL occur between early and advanced stage of cancer (Goncalves, 2010). These findings may be explained by the response shift theory i.e. the concept that when an individual undergoes a change in health status, there may be changes in the meaning of one's evaluation of QOL. Response shift theory is a psychological process of adjustment to illness, allowing people to maintain acceptable QOL in spite of deteriorating health (Bartoces, 2009).

Meanwhile for role functioning, stage I had the highest score for QOL followed by stage II, IV and stage III had the lowest score for role functioning. It is believed that patients at later stage of cancer will have poor role functioning as later stage like stage IV usually planned for palliative management therefore they unable to do much work (Distefano et al., 2008).

In this study we also found emotional functioning was affected by the stage of cancer. Here, we can see stage III had the highest score for emotional functioning. This finding was contradictory with previous study report (Baze et al., 2008). The severity of the disease played an important role in emotional functioning. It is stated that increasing stage of cancer contributed to poorer emotional functioning among the cancer patients. This condition can be explained by the Kubler-Ross model on five stages of grief (Ross, 2005). However, in contrast, there was study showed that cancer stage did not significantly influence emotional functioning of cervical cancer patients (Pasek et al., 2012).

Kubler-Ross hypothesis was that when a person (and/or their survivors) is faced with the reality of their impending death, she/he will experience a series of emotional stages: denial, anger, bargaining, depression and acceptance (in no specific sequence). Therefore, we can say that the cervical cancer patients at stage III already accept their fate and passed the five stages of grief. Now, they may be even be grateful that they at least still alive and not at the final stage, stage IV. So, this translates in good emotional functioning compared to stage I and II.

Stage of cancer gave significantly difference means score with pain symptoms among the cervical cancer survivors. Here we can see that later stage III gave more response towards pain symptom compared early stage of cancer I and II. It is best explained that the later stage contributed to higher response of pain due to its severity.

This study was primarily limited by low response rate and sampling of the study population which rendered the non-generalization of the results to the general population. Furthermore, due to the cross-sectional nature of the study design, causal inference cannot be made.

In conclusion, this study has implications for the health provider in providing better counseling to the cervical cancer patients prior to any stage of cervical cancer as this will have a great impact on their QOL. This information

is very important to the cervical cancer survivors as their coping system may improve with the advanced information on the related factors that may influence their QOL after the treatment.

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