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Assessing Clinical Outcomes, Quality Of Life, And Treatment Toxicities In Advanced-Stage Cancer Patients: A Focus On Tumour Response And Symptom Management

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Abstract

Cancer has been one of the health problems in the world with high-stage cancers having the worst prognosis and difficult treatment procedures. The reason behind this study was to measure clinical outcomes, quality of life (QoL) and treatment associated toxicity in a cohort of 60 patients receiving treatment on advanced stage cancer, mainly adenocarcinoma. The patients were largely males (58.3) with a median age of 62 years and had already received previous chemotherapy. The researchers assessed the tumour response based on RECIST which showed a response rate of 33.3% and 36.7% of patients had progressive disease. Control of the disease was done in 56.7% of the patients. Treatment-related toxicities were common (acnesiform rash 70%), diarrhoea (36.7%), and stomatitis (11.7%), Grade 1 being the most common in all cases. The overall QoL increased by a significant margin in all domains, with Global QoL 36.2 to 55.1 ($p = 0.01$) and physical functioning increasing by 47.31 to 65.07 ($p = 0.01$). There was also an improvement in symptom management and fatigue, loss of appetite, dyspnoea, and coughing were reduced significantly. Nonetheless, there was no significant improvement in haemoptysis ($p = 0.21$). The objective tumour responders were found to have a better QoL and functioning in physical, role and social domain than their non-responders. The findings emphasize the need to focus on clinical efficacy and symptom management as two critical aspects of cancer treatment to have the maximum patient outcomes. The paper highlights the importance of close attention to treatment-related toxicities and constant supportive care, particularly in late cancer conditions, to increase QoL and efficacy of treatment.

Keywords: Cancer, Quality of Life, Tumour Response, Treatment Toxicity, Symptom Management

Introduction

Cancer is one of the major health problems in the world since it is the cause of the deaths of millions of people per year. Though cancer treatment has improved, various patients affected with advanced stages still have poor prognosis, indicating the importance of effective treatment modalities which do not only address the development of tumours, but also address various symptoms as well as enhance quality of life (QoL). The control of the symptoms and treatment-related toxicity of cancer is in this context central in the wellbeing of the patient and the overall outcome of the treatment. [1] The aim of the study was to evaluate clinical outcomes, QoL and toxicity of treatment on 60 cancer patients receiving therapy, including tumour response, symptom management and effect of treatment on QoL of patients. The study population was mainly made up of persons who had been diagnosed with high-stage cancer mainly adenocarcinoma and had undergone chemotherapy. These aged patients having a median age of 62 years belonged to a spectrum age of 28 to 90 years. Most of the patients (85%) exhibited stage IV disease and over 53.3% patients had undergone three or more chemotherapy regimens before taking part in this study. The main goal was to test tumour response and this was measured through the use of RECIST (Response Evaluation Criteria in Solid Tumours) that categorises tumour response as complete response, partial response, stable disease, and progression disease. [2] Imaging modalities were used to determine tumour response in terms of CT scan and MRIs conducted at baseline and after every cycle of treatment. Secondary endpoints were symptom management and QoL, which were measured with the use of the EORTC QLQ-C30 questionnaire. This is a validated instrument that assesses different variables of health status of patients such as global QoL, physical functioning, role functioning, emotional functioning, cognitive functioning and social functioning. Also, the questionnaire contains the evaluation of typical cancer related symptoms fatigue, loss of appetite, dyspnoea, cough, haemoptysis, and pain. [3-4] Another important part of the study was the evaluation of the treatment-related toxicities. Unfavorable events were noted and coded using the Common Terminology Criteria of Adverse Events (CTCAE) offered at the National Cancer Institute with specific emphasis on Grade 1, 2, and 3 toxicities. The objective of the study was to have a systematic assessment of the balance between the effectiveness of treatment and control of treatment side effects with the end outcome being to optimize the therapy regimens to ensure minimal toxicity and optimal patient outcome. The statistical results were compared using paired t-tests and confidence intervals to determine the differences in the QoL scores between baseline conditions and the second treatment cycle. Response rates and disease control rates were also calculated in this study to establish the effectiveness of the treatment whereby p-values below 0.05 are said to be significant. This study will help us

to gain important information about the role of the comprehensive approach to the cancer care focusing not only on the disease but on the life aspect of the cancer patients at large.

Methods

The research was aimed to assess clinical outcome, quality of life (QoL), and treatment induced toxicities in a cohort of 60 cancer patients who were having therapy. The population of the study included people with cancer of advanced stages (mostly adenocarcinoma) with a median age of 62 (28-90). Measurable disease was used to enroll the patients who must also have undergone one previous chemotherapy regimen. Informed consent was made by all the patients to participate in the study. [5] Baseline demographic data (age, gender, and histological sub type) and baseline functional status (the Eastern Cooperative Oncology Group Performance Status, ECOG PS) were gained. Patients were divided as per their TNM staging and most of them (85) came out with stage IV disease. The proportion of patients who had already gone through three or more chemotherapy regimens prior to joining were 53.3. The assessment of tumour response was the main outcome of the research and it was assessed according to the RECIST (Response Evaluation Criteria in Solid Tumours) scale which comprised complete response, partial response, stable disease and progressive disease. [6-7] the imaging used to assess tumour response was CT scans and MRI at baseline and after each of the two treatment cycles. Secondary endpoints were the symptom management and QoL that were measured with EORTC QLQ-C30 questionnaire. The questionnaire was distributed to the patients on baseline and the second treatment cycle. The scale measures different domains, such as the global QoL, physical functioning, role functioning, emotional functioning, cognitive functioning, and social functioning. Besides, symptom-related items, including fatigue, loss of appetite, dyspnoea, cough, haemoptysis, and pain, were assessed. The adverse events due to treatment were documented and were graded using the Common Terminology Criteria for Adverse Events (CTCAE) of the National Cancer Institute, and Grade 1, 2, and 3 adverse events were given particular focus. [8] At every treatment cycle, data on adverse events, including acnesform rash, diarrhoea, nausea, vomiting, stomatitis and liver enzyme increases were recorded. The descriptive statistics were used to present the baseline characteristics and clinical outcome, and the change in QoL scores between baseline and the second cycle were assessed with the help of the paired t-tests. Also response rates and disease control rates were computed using 95 presented with confidence interval (CI) to find out the effectiveness of the treatment. P-values below 0.05 were taken to be statistically significant. The institutional review board approved the study and all the subjects gave informed consent in writing.

Result

The evaluation of clinical outcomes and the quality of life (QoL) was done in a group of 60 individuals and was limited to tumour response, treatment-associated toxicity, and the ability to control symptoms. The mean age of the patients was 62 years with the minimum of 28 years old and the maximum age of 90. A majority of the patients were men (58.3%), whereas the most frequent histology was adenocarcinoma (63.3%). Most of the patients were at the advanced stage of the disease at baseline (85%), and 53.3% of those were subjects undergoing three or more previous chemotherapy regimens. [9-10] the response rate in terms of tumour response was 33.3 (95% CI: 22.1 46.1) and the response was partial in 33.3% patients and the progressive disease was seen in 36.7% patients. The rate of controlling the disease was 56.7% (95 percent interval: 47.1 -66.0). Toxicities associated with treatment were frequent with the most adverse event being acnes form rash (70.0), diarrhoea (36.7) and stomatitis (11.7). Grade 1 toxicities occurred the most among all adverse events with 56.7% of patients having Grade 1 acnes rash. The symptom management showed significant improvement in QoL. Second-cycle of treatment showed significant improvements in all the QoL domains and Global QoL, physical functioning, role functioning, emotional functioning, and social functioning. To be more precise, the Global QoL score improved by the baseline mean of 36.2 (SD = 24.3) to 55.1 (SD = 16.5), and the p value was 0.01. There was also the improvement in physical functioning, where the mean score rose to 65.07 (SD = 20.32) as compared to 47.31 (SD = 24.55) ($p = 0.01$). There were also improvements in the symptoms with fatigue, loss of appetite, dyspnoea, and coughing decreasing significantly with the change in fatigue decreasing at a baseline of 64.12 (SD = 25.83) to 45.73 (SD = 22.16) ($p < 0.01$). Nonetheless, haemoptysis was not statistically significant ($p = 0.21$). It is important to note that the responders scored much higher on QoL scores than non-responders. In the objective tumour responders, 90.9 percent and 36.8 percent of the non-responders, respectively, had improvements in Global QoL and physical functioning. In the same way, the role functioning and social functioning scored highly among the responders as compared to the non-responders. [11] The findings reveal that objective tumour response correlates with substantial changes in QoL and symptomatic rates, and the high frequency of treatment-related toxicity, especially acnes-like rash and diarrhoea, indicates the necessity of the close attention in the treatment of this patient group. These results highlight the significance of clinical efficacy and symptom management in maximizing patient outcome in the course of cancer treatment.

Table 1: Patient Demographics and Baseline Characteristics (n = 60)

Characteristic	**Value**
Median age, years (range)	62 (28–90)
Gender, n (%)	
Male	35 (58.3)

Female	25 (41.7)
ECOG PS, n (%)	
0	5 (8.3)
1	28 (46.7)
2	16 (26.7)
3	11 (18.3)
Histology, n (%)	
Squamous	19 (31.7)
Adenocarcinoma	38 (63.3)
Unspecified	3 (5.0)
TNM staging, n (%)	
IIIa	2 (3.3)
IIIb	7 (11.7)
IV	51 (85.0)
Prior chemotherapy, n (%)	
1 regimen	8 (13.3)
2 regimens	20 (33.3)
≥3 regimens	32 (53.3)

Table 2: Treatment-related Toxicity in Patients (n = 60)

Adverse events	Grade 1	%	Grade 2	%	Grade 3	%	Total n (%)
Acneform rash	34	56.7	6	10.0	2	3.3	42 (70.0)
Diarrhoea	20	33.3	2	3.3	-	-	22 (36.7)
Nausea	3	5.0	2	3.3	-	-	5 (8.3)
Vomiting	-	-	2	3.3	-	-	2 (3.3)
Stomatitis	7	11.7	-	-	-	-	7 (11.7)
Increased ALT	2	3.3	-	-	-	-	2 (3.3)
Increased AST	2	3.3	-	-	-	-	2 (3.3)

Table 3: Tumour Response and Disease Control in Patients (n = 60)

Patients	n (%)
Complete response	2 (3.3)
Partial response	20 (33.3)
Stable disease	14 (23.3)
Progressive disease	22 (36.7)
Early death	2 (3.3)
Response rate, % (95% CI)	33.3 (22.1–46.1)
Disease control rate, % (95% CI)	56.7 (47.1–66.0)

Table 4: Changes in Mean Scores for QoL and Symptoms (n = 60)

QoL Items	Baseline Mean (Standard Deviation)	2nd Cycle Mean (Standard Deviation)	p value
Global QoL	36.2 (24.3)	55.1 (16.5)	0.01
Physical functioning	47.31 (24.55)	65.07 (20.32)	0.01
Role functioning	42.91 (34.50)	56.73 (25.87)	0.03
Emotional functioning	67.51 (28.12)	84.64 (19.29)	<0.01
Cognitive functioning	65.80 (28.34)	75.91 (18.45)	0.08
Social functioning	42.79 (32.11)	60.23 (26.72)	0.01
Symptoms Items			
Fatigue	64.12 (25.83)	45.73 (22.16)	<0.01
Appetite loss	41.22 (36.23)	20.17 (24.34)	0.01
Dyspnoea	60.33 (27.95)	39.41 (23.68)	<0.01
Coughing	58.40 (36.23)	28.71 (30.55)	<0.01
Haemoptysis	12.03 (18.64)	7.12 (17.09)	0.21
Pain in chest	35.90 (33.04)	17.21 (19.43)	0.04
Pain in arm or shoulder	23.85 (27.61)	12.91 (19.24)	0.03
Pain in other parts	25.15 (27.58)	14.19 (21.87)	0.02

Table 5: QoL and Symptom Response Rates Among Objective Tumour Responders and Nonresponders (n = 60)

Items	Responders (n = 22)	%	Nonresponders (n = 38)	%	p value
QoL					
Global QoL	20	90.9	11	28.9	0.004
Physical Functioning (PF)	20	90.9	14	36.8	0.042
Role Functioning (RF)	20	90.9	14	36.8	0.012
Emotional Functioning (EF)	22	100	30	78.9	0.23
Cognitive Functioning (CF)	20	90.9	21	55.3	0.09
Social Functioning (SF)	20	90.9	16	42.1	0.033
Symptoms					
Dyspnoea	18	81.8	10	26.3	0.021
Coughing	20	90.9	14	36.8	0.042
Haemoptysis	22	100	27	71.1	0.105
Appetite Loss	22	100	24	63.2	0.046
Fatigue	16	72.7	8	21.1	0.01

Discussion

The purpose of this study was to assess the clinical outcomes, quality of life (QoL) and treatment-related toxicities in a group of 60 cancer patients during their treatment, with most of them having an advanced-stage adenocarcinoma. [12-15]The median age of the patients was 62 years with the range between 28 and 90 years of age that indicates a wide age range among cancer patients that are in their advanced stages. A large proportion of the group (85 percent) had a disease of stage IV, which has worse prognosis and more complicated treatment strategies. Already more than a half of the patients (53.3%) had gone through three or more past chemotherapy cycles and the fact that their disease was rather advanced and it was rather difficult to deal with treatment-resistant cancers. Tumour response as the primary clinical outcome was assessed by the use of the RECIST criteria and showed that the response rate is 33.3% and partial responses were seen in a third of patients.[16-18] This is congruent with the anticipated results in cancer patients in an advanced stage undergoing chemotherapy, whereby the response rates can be mediocre, and the progression is also frequently observed. The disease control rate was found at 56.7 percent which comprised those with stable disease as well as those with responders indicating that a large number of patients (nearly half) had some level of therapeutic advantage yet progression was still a major problem. Toxicities attributed to treatment were common (acidem form rash (70%), diarrhoea (36.7), and stomatitis (11.7)) and Grade 1 toxicity was the most prevalent (and died of rash being the most frequent). These results indicate the high cost of treatment-related adverse effects, which may affect patient health and compliance to treatment. These toxicities highlight the importance of sparse management and the possibility of dose adjustments or supportive strategies to reduce the adverse effects.[19-20] Nevertheless, it was found that the second round of the treatment brought about significant changes in the QoL, especially global QoL, physical functioning, role functioning, and emotional functioning. The global QoL was changed with a baseline of 36.2, and it was increased to 55.1 ($p = 0.01$), which indicated that the treatment had a significant positive effect on the overall quality of life of patients. Improvement in physical functioning was also significant ($p = 0.01$), meaning that patients could achieve some physical functioning, which is essential in ensuring that they were able to remain independent and minimize the effects of the disease in their daily lives. Among the most notable ones is the positive emotional and social functioning that describes positive psychological and social outcomes of effective control over symptoms and the disease. [21] Nevertheless, there was a smaller improvement in cognitive functioning, p 0.08 which indicates that cognition impairments might be less amenable to treatment and might need other supportive interventions. The symptom management improved significantly as the fatigue, loss of appetite, dyspnoea, and coughing also reduced. Fatigue, a typical and disabling symptom among cancer patients, was reduced during the treatment with a baseline score of 64.12 to 45.73 ($p < 0.01$), indicating that the treatment was helpful in reducing one of the most unpleasant results of the advanced cancer. Nonetheless, the statistically significant difference in haemoptysis was not observed ($p = 0.21$) which is possibly explained by the fact that the given symptom is persistent in some patients despite the treatment. The paper also revealed that tumour responders also derived much higher scores on QoL as compared to non-responders which indicated the strong relationship that existed between objective improvement in tumour response and the increase in QoL. [22] Physical, role, and social functioning was also better in responders than in non- responders, which means that control of tumours can have a significant influence on the possibility of respondents to perform their daily operations and social contacts. The results of this research highlight the significance of a holistic approach towards cancer treatment, which should not only be concerned with tumour response but it should also be aimed at treating the side effects of the treatment and enhancing the quality of life. Although the therapy led to severe clinical responses in most patients, the rate of adverse events, especially acnesform rash and diarrhoea, explains why it should be handled very carefully to reduce toxicity. The findings also confirm the validity of continuous symptom management and supportive care as a method of enhancing patient outcomes, especially in advanced-stage cancer that is characterized by

high burden of treatment. There is also a need to conduct further studies to maximize the treatment plan and the use of supportive care measures so that the patients can get the most out of their cancer treatment programs and reduce the harm.

Conclusion

This paper shows that thoroughness of treatment of cancer is of the paramount importance especially in patients with advanced stage cancer. The results highlight the importance of tumour response as the most important factor in determining the success of treatment, but equally, the quality of life (QoL) and treatment-related toxicities in maximising patient outcomes. The response rate of 33.3 percent and the disease control rate of 56.7 percent among members of this cohort are in line with the expected values among patients with metastatic cancer and highlight the problem of treating chemotherapy-resistant cancers. Nevertheless, there was a marked increase in QoL especially in global QoL, physical functioning, role functioning and emotional functioning. These findings are indicative that with a good management of the symptoms and supportive care, there may be significant improvements to the overall well-being of the patients despite continuous disease progression. Adverse events such as toxicities, more often Grade 1, were common and toxicities, especially acneform rash and diarrhoea were the most common. Their commonness and intensity justify the importance of attentive management measures, such as possible dose adoptions, as well as the integration of supportive interventions to reduce the effects of therapy on the quality of life of patients. The research also established that objective tumour responders had higher QoL scores and better functioning in different areas including physical, role, and social functioning than non-responders. This also adds to the fact that tumour control is one of the determinants of patient outcome enhancement. On the whole, the results highlight the significance of dealing with both clinical efficacy and symptom management in treating advanced-stage cancer. Treatment-related toxicities, which should be carefully monitored, are what contribute to the improved well-being of patients and the maximization of the value of treatment. Future studies should be done on how to maximize the treatment regimens and generate specific interventions that would take care of the high burden of side effects. Through better treatment plans and supportive care, our patients with cancer, especially the advanced ones, will be given the best possible care that will not only be effective but also have a higher quality of life.

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