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Notes and Comments

Assessment of the Quality of Life of Patients with Advanced Cancer

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Abstract—*Four methods of assessment of the quality of life were compared in* 100 *patients with advanced cancer. All showed highly significant correlations with each other. In particular, a single-item linear analogue self-assessment (LASA) which indicated the patients' general feeling of well-being showed a highly significant correlation with multiple item measures of the quality of life (interviewer-administered and self-administered versions of a* 5*-item quality of life index, and a* 21*-item LASA). The LASA indicating well-being was compared in a further* 30 *patients with a similar single-item LASA in which the term 'quality of life' was used. This comparison again showed a highly significant correlation. It is concluded that a single-item LASA asking the direct question "How would you rate your quality of life today?" is a valid and reliable indicator of the quality of life of patients with cancer.*

INTRODUCTION

FOR THE majority of patients with advanced stages of the common cancers, palliative therapy has no beneficial effect on the tumour or on the patients' survival. Furthermore, palliative therapy for patients with incurable cancer may be both toxic and inconvenient [1]. In these circumstances it is important to consider the effect of therapy on the patients' quality of life.

Methods used to measure the quality of life have often been extremely comprehensive, time-consuming for the patient and interviewer and complicated in their analysis. Such comprehensive questionnaires have not gained acceptance for general use.

A practical system for assessment of the quality of life must be simple, relevant and capable of rapid completion by the patient or a professional interviewer. One recent study has identified major components of the quality of life and integrated these into 5 items on a quality of life index, which may be self-administered or administered by a professional interviewer [2]. Another recent study used linear analogue self-assessment of multiple items considered to be important components of the quality of life [3]. We have applied these questionnaires in a study to test, by comparison, a new and simple measure of the quality of life which can be used routinely in the clinic, or for the assessment of patients in clinical trials.

MATERIALS AND METHODS

One hundred and fifteen patients agreed to take part in the major study. All had advanced metastatic cancer, predominantly gastrointestinal, breast or melanoma. The selection of therapy was not under the control of the investigators.

Each patient was evaluated on 4 occasions at 4-weekly intervals for a total of 12 weeks. On each occasion the following 4 questionnaires were completed: (1) a single-item visual analogue scale consisting of a 10-cm unmarked line for rating well-being (LASA-WB) in response to the question "How would you rate your general feeling of well-being today?" (2) a quality of life index (QL index) with five items: (a) activity; (b) daily living; (c) health; (d) support; and (e) outlook [2]. This questionnaire (QLIA) was administered by a research medical social worker (L.S.) after a preliminary study of 30 patients with

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cancer had shown excellent correlation (Kendall's rank correlation coefficient, $\tau = 0.66, P < 0.001$) between scores obtained by L.S. and a physician (I.R.G.) using this questionnaire; (3) a self-administered version of the QL index (QLSA) [2]; and (4) a 21-item linear analogue self-assessment questionnaire modified from Baum *et al.* [3] (LASA-21).

The LASA-21 questions were grouped as follows to allow comparison with the corresponding items on the QL index: (a) activity (work, hobbies, mobility); (b) daily living (self-care, social contacts); (c) health (pain, nausea, vomiting, breathlessness, fatigue, anorexia, constipation, diarrhoea, alopecia, insomnia); (d) support (family relationships, sexual relationships, rapport with friends); and (e) outlook (decision making, anxiety, depression). Patients were also asked to identify and rank up to 3 health items and 3 items from other categories which were most important to them at the time. Each QLIA and QLSA question was scored 0, 1 or 2 to give a maximum of 10 for the 5 questions, and each LASA-WB and LASA-21 question was subsequently scored in centimetres, giving a range of values of 0–10.

The scores to be analysed were from independent questionnaires, three of which were established indicators of the quality of life and the fourth was to be compared to the others. With the exception of the two QL indices, the questions and scales were different and a statistical test of association, Kendall's rank correlation coefficient [4], was therefore appropriate.

After scores from these questionnaires had been analysed, the LASA-WB was compared in a further 30 patients with an alternative version (LASA-QL) in which the question put was: "How would you rate your quality of life today?" These two versions were offered initially in random order and then repeated in reverse order 1 hr later.

RESULTS

Three hundred and thirty-five complete sets of data were obtained from 100 patients in the major study. The initial data from 15 of the 115 patients was incomplete, and of the 100 patients from whom complete sets of data were available, 73 completed 12 weeks of assessment. The patients comprised 65 females and 34 males with a median age of 55 yr (range 20–82). Cancer types were: gastrointestinal, 49; breast, 36; melanoma, 11; and others, 4. Seventy-eight patients were receiving palliative chemotherapy and 22 were receiving only symptomatic therapy.

The combined scores obtained on the questionnaires was as follows: QLIA, mean = 7.55, S.D. = 1.94, range = 3–10; QLSA, mean = 7.84, S.D. = 1.91, range = 2–10; LASA-21, mean = 7.77, S.D. = 1.97, range = 1–10; LASA-WB, mean = 6.13, S.D. = 2.78, range = 0–10. Table 1 shows the value for Kendall's rank correlation coefficient when the total scores for each set of data obtained at the same time were compared. All scores showed a highly significant correlation with each other ($P \ll 0.001$).

Items noted by the patients as being most important to them were assigned the number 3 if ranked first, number 2 if ranked second and number 1 if ranked third. These numbers were then totalled to give an order of priority of items. The 10 most important concerns in decreasing order were fatigue, anxiety, depression, insomnia, hobbies, pain, alopecia, work, nausea and sexual relationships. Other items, such as family relationships, might have been considered important components of the quality of life, but because they were satisfactory at the time would not have appeared on the list of items causing problems. Individual items on the LASA-21 which correlated most strongly with the LASA-WB were, in descending order: fatigue, work, hobbies, depression, anorexia, anxiety, mobility, rapport with friends, nausea and pain.

When individual questions were compared with each other and with the total for QLIA and QLSA, and the sub-groups of LASA-21 were compared with each other and with the total of LASA-21 and LASA-WB, totalling 51 values, the values of τ for the correlations had a mean of 0.39 and a standard deviation (S.D.) of 0.23. Items having a low correlation (<0.16, 1 S.D. below the mean) with each other and also with the total for the respective questionnaire could be considered as non-discriminatory components of the quality of life. Of items having a high correlation (>0.62, 1 S.D. above the mean) with each other, one of each pair could be considered redundant. These two categories of items were examined in the subsequent analysis.

On the QL indices the question concerning support had a low correlation with the other questions and with the total: for QLIA $\tau = 0.03$, 0.02, 0.07, 0.11 and 0.16, and for QLSA $\tau = -0.02$, -0.06, 0.03, -0.01 and 0.11, compared with each of the other 4 items and the totals respectively. The mean score for this question was 1.95 (S.D. = 0.22) on QLIA and 1.94 (S.D. = 0.3) on QLSA. It appeared that nearly all patients regarded their support as adequate, and therefore the item was not discriminatory.

To test the effect of simplifying the 21-question LASA individual item scores on the LASA-21 were examined regarding their means, standard deviations, correlation with other questions, correlation with total score and the weighting

Table 1. Correlation coefficients (Kendall's τ) for questionnaires compared with each other

Comparison	Combined ($n = 335$)	0 weeks ($n = 100$)	4 weeks ($n = 85$)	8 weeks ($n = 77$)	12 weeks ($n = 73$)
QLIA vs QLSA	0.72	0.51	0.75	0.84	0.86
QLIA vs LASA-21	0.56	0.46	0.60	0.56	0.59
QLIA vs LASA-WB	0.53	0.38	0.55	0.54	0.67
QLSA vs LASA-21	0.53	0.54	0.54	0.47	0.58
QLSA vs LASA-WB	0.55	0.53	0.49	0.51	0.66
LASA-21 vs LASA-WB	0.57	0.50	0.57	0.59	0.65

given to them by patients. The questions concerning diarrhoea and alopecia had low correlations with other health items and with the total score. Pairs of questions which had a high correlation with each other were work and hobbies (0.70), mobility and self-care (0.72) and anxiety and depression (0.74). One of each of these pairs was excluded from subsequent analyses on the basis of lower standard deviation (indicating lower sensitivity) or lower priority as rated by the patients. The LASA-21 was then retotalled by first excluding the items diarrhoea and alopecia, and secondly excluding diarrhoea, alopecia, work, self-care and depression. These revised totals were then correlated with the scores for the two QL indices (including and excluding the support item) and with LASA-WB, but correlation coefficients were not altered.

The scores (mean ± S.D.) for the final 30 patients administered LASA-QL and LASA-WB were as follows: LASA-QL administered first, 6.93, S.D. 2.62; LASA-QL administered second, 6.03, S.D. 2.45; LASA-WB administered first, 7.00, S.D. 2.44; LASA-WB administered second, 6.90, S.D. 2.45. The order of asking showed no trend and the correlation coefficient for the two LASA-QL was 0.76 and for the two LASA-WB was 0.75. Correlation coefficients for LASA-QL compared to LASA-WB were 0.63 and 0.78 for the first and second administrations respectively. All correlations were highly significant ($P \leqslant 0.001$).

DISCUSSION

The primary objective of palliative therapy of advanced cancer is preservation or improvement in the quality of the patient's life. However, most studies of palliative cancer treatment have assessed tumour response, the patient's survival and objective toxicity of the therapy. Sometimes physical performance is recorded [5, 6], but quality of life has generally not been assessed.

The concept of the quality of life has until recently been regarded as too abstract and complex to be quantified. The components which comprise the quality of life are multiple and include physical, social and emotional function, attitudes to illness, family interactions, daily activity and the cost of illness [7]. They may be as varied as individual personalities.

However, current evidence suggests that it is feasible to devise an indicator of the quality of life which is widely applicable. In this case an indicator is an observable variable assumed to estimate some other (usually unobservable) variable [8].

Spitzer and his colleagues [2] formed representative panels of people concerned with health problems in the community and developed several questionnaires containing items which the panels considered to be important components of the quality of life. These draft questionnaires were subsequently assessed in a series of studies which allowed refinement of the initially large number of items to a final group of 5 items known as the QL index. The simplified 5-item QL index was shown to be valid, reliable and capable of rapid completion; the professionally administered (QLIA) and self-administered versions (QLSA) of this index were utilized in the present study.

Linear analogue self-assessment (LASA) as a method of measuring subjective feelings has been similarly shown to be both valid and reliable [9, 10], and has become a standard research tool. In the context of malignant disease, LASA has been shown to be useful in the assessment of the quality of life of patients with breast cancer [11]. The 21-item LASA used in this study was based on a comprehensive 25-item questionnaire devised to compare subjective responses in a trial of endocrine and cytotoxic treatment in advanced breast cancer [3] and was modified to apply to both sexes and other cancer types.

Although there have been many attempts to devise measures of community health [12–18], most of these are comprehensive and include multiple measures of physical, social and emotional status. In general these health indices are lengthy and time-consuming, require specially trained research personnel to record and interpret the data, have limited applicability outside their area of original development and have not been specifically concerned with the quality of life. For these reasons they are unsuitable for repeated routine assessments.

In this study, questionnaires specifically oriented towards measuring the quality of life and previously shown to be valid and reliable have been further developed. We have shown that the questionnaires correlate well with each other and therefore measure similar variables. There was a tendency for the correlation to improve with each administration, and this could be attributable to learning. It is not surprising that the highest correlation was observed between QLIA and the QLSA since these ask the same questions. It was not possible to improve the multiple component questionnaires by deleting items which were either non-discriminatory or redundant. The most important result of the major study was that the single-question LASA-WB correlated well with all three more comprehensive questionnaires.

'Well-being' has been previously evaluated using LASA and the technique shown to be both sensitive and reliable [19]. A quality of life indicator has been defined as one which estimates degrees of well-being [5], and certainly 'quality of life' and 'well-being' are concepts difficult to distinguish from each other; the LASA-WB was shown in our final study group to correlate highly with the LASA-QL, and both were shown to be reproducible.

During the development of the 5-item QL index a linear analogue scale ('uniscale') was compared with multidimensional questionnaires and highly significant correlations observed [2]. Despite the favourable results found during its application, 'uniscale' was rejected because of the opinion of the majority of panel members that multiple component measures were more likely to have content validity. In this study the high correlation with other questionnaires is in itself evidence of validity and does not justify rejection in favour of more complex questionnaires.

We conclude, therefore, that a single direct question asking "How would you rate your quality of life today?" and scored by the patient on an unmarked 10-cm scale with 'very high' indicated at one extreme and 'very low' at the other is a valid and reliable indicator of the quality of life of patients with advanced cancer. While optimum symptomatic management of an individual patient would require more detailed questioning, this simple measure is advocated for routine periodic assessment of the quality of life of patients with cancer, particularly in clinical trials.

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