extra time provided by the effects of treatment in a conscious way to achieve their personal goals.

Breaking the cycle of collusion between doctor and patient is not primarily a question of whether the patient has to be informed at all, which usually is the case, but rather how doctors and patients deal with these facts in practice. Awareness cannot be forced on the patient, it can only be supported. This requires an active, patient orientated approach from the doctor. Perhaps solutions to the problem of false optimism about recovery and not knowing a poor prognosis have to be found outside the doctor-patient relationship itself. An example of such a solution would be the involvement of “treatment brokers,” people who are trusted by the doctor and the patient and can help both parties in clarifying and communicating their otherwise implicit assumptions and expectations.

Contributors: A-MT was involved in the conception and the design of the study, collected all data, and contributed to the analysis and interpretation of the data. TH contributed to the analysis and interpretation of the data. GK was involved in the conception and the design of the study, supervised data collection, and contributed to the analysis of the data and the final version of the paper. GW contributed to the interpretation of the data and the drafting of the paper. A-MT and TH are guarantors.

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Competing interests: None declared.

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Using the modified Barthel index to estimate survival in cancer patients in hospice: observational study

Mike Bennett, Nicola Ryall

Professionals in palliative care often base clinical decisions on estimated prognosis, but it has been shown that they are less accurate than the Karnofsky index at predicting prognosis in terminally ill patients. Because our clinical experience suggested that in patients in hospice the rate of change in physical functioning was a more useful indicator of survival than absolute measures, we investigated the use of rate of change of physical function in estimating survival of terminally ill patients with cancer by using the modified Barthel index. This comprises 10 activities of daily living, each with five levels of dependency; the maximum score is 100 points, representing independence in daily living. We thought it was a more sensitive index for measuring physical functioning in this patient group than the Karnofsky index.

Patients, methods, and results

We studied two samples of patients with cancer from the same hospice to generate and test the model. We determined sample sizes empirically from patients admitted consecutively over two different periods of two months (January-February and March-April 1998), in whom the modified Barthel index was determined weekly from admission for the duration of inpatient stay. Barthel score at admission, mean weekly change in score during inpatient stay (defined as final score minus admission score divided by length of stay), and survival from date of admission were recorded.

The two populations were similar with respect to Barthel score at admission, length of stay, and survival (table). In sample 1, survival correlated with Barthel score at admission ($r = 0.25, P = 0.014$) but more closely with mean weekly change ($r = -0.52, P < 0.001$).

To examine this relation further, three groups were pragmatically constructed from the first sample on the basis of mean weekly change in Barthel scores. These represented clinical patterns commonly seen in terminally ill patients: stable physical functioning (no loss of points), moderate deterioration (1-9 points lost per week), and marked deterioration (10 or more points lost per week).

This model was applied to sample 2 to assess its ability to estimate survival. Survival correlated with Barthel score at admission ($r = 0.3, P = 0.002$) but more closely with mean weekly change ($r = -0.52, P < 0.001$). Corresponding groups between samples had similar median survival, but the differences in survival between the three groups within each sample were significant (table).

Comment

In terminally ill patients in a hospice, rates of change were more important indicators of survival than absolute measures. Mean change in weekly Barthel scores was calculated to provide a crude clinical marker of changing physical function. Using mean change assumes that the modified Barthel index is an interval
Barthel score, change in Barthel score, and survival time of patients in hospice with cancer

<table>
<thead>
<tr>
<th>Sample 1 (n=93)</th>
<th>Sample 2 (n=104)</th>
<th>P value (Mann-Whitney U test)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean (range)</strong> Barthel score at admission</td>
<td><strong>Mean (range)</strong> Barthel score at admission</td>
<td><strong>Mean (range)</strong> Barthel score at admission</td>
</tr>
<tr>
<td>66 (3-130)</td>
<td>58 (2-130)</td>
<td>0.056</td>
</tr>
<tr>
<td><strong>Median (range)</strong> length of stay (days)</td>
<td><strong>Median (range)</strong> length of stay (days)</td>
<td><strong>Median (range)</strong> length of stay (days)</td>
</tr>
<tr>
<td>18 (5-104)</td>
<td>19 (3-86)</td>
<td>0.82</td>
</tr>
<tr>
<td><strong>Median (range)</strong> survival (days)</td>
<td><strong>Median (range)</strong> survival (days)</td>
<td><strong>Median (range)</strong> survival (days)</td>
</tr>
<tr>
<td>35 (5-473)</td>
<td>27 (3-349)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

No loss of points: 56 (23-137) (n=50) 68 (19-128) (n=41) 0.91
1-9 points lost: 32 (17-56) (n=24) 31 (15-45) (n=39) 0.51
≥10 points lost: 14 (11-20) (n=19) 15 (8-20) (n=24) 0.65

P value (Kruskal-Wallis test) <0.001 <0.001 –

Although Barthel score at admission correlated with overall survival, no differences in scores on admission were found among the three groups in either sample (sample 1, P = 0.08, and sample 2, P = 0.74, Kruskal-Wallis; see table on website). Admission score therefore cannot be used to determine pattern of subsequent change and hence to estimate survival more accurately.

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Contributors: MB had the original idea, designed the study, analysed the results, and drafted the paper. NR helped to collect and interpret the data and revise the paper. MB is guarantor for the study.

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Drug points

Apparent interaction between warfarin and levonorgestrel used for emergency contraception

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Emergency contraception with progestogen only (two doses of levonorgestrel 0.75 mg given 12 hours apart and within 72 hours of unprotected intercourse) is better tolerated and more effective than the combined oestrogen-progestogen (Yuzpe) regimen. Furthermore, treatment with progestogen only may be preferable to the Yuzpe regimen in women with a known thrombophilic defect or history of thromboembolic events. For women receiving warfarin, drug information cites either no interaction or anticoagulant effect. We describe an enhanced anticoagulant effect of warfarin after giving a woman levonorgestrel for emergency contraception.

A 35 year old woman with familial type 1 (quantitative) antithrombin deficiency and a history of extensive deep venous thrombosis and pulmonary thromboembolism, attended the clinic after an episode of unprotected intercourse. She was receiving warfarin 7 mg daily for anticoagulation but no other drugs. Her international normalised ratio was 2.1, which was within the therapeutic range (2.0-3.0). She requested emergency contraception. After counselling, she declined the insertion of an intrauterine contraceptive device, preferring the progestogen only regimen. Her international normalised ratio was rechecked three days later and was reported as 8.1. She was advised to discontinue warfarin treatment for two days, at which point her international normalised ratio was 2.5, and then to restart it at a dose of 5 mg once daily. No haemorrhagic problem occurred.

One possible explanation for this enhanced anticoagulant effect is the displacement of warfarin by levonorgestrel from the F1S binding site of human α1-acid glycoprotein, the main transport protein for drugs in plasma. The variant of the F1S binding site comprises part of the F1S/A phenotype of α1-acid glycoprotein, which is encountered in 50% of the population.

This woman receiving warfarin treatment may be at risk of an interaction between warfarin and levonorgestrel if they are prescribed the progestogen only regimen because of its apparent safety. The manufacturer of levonorgestrel (Wyeth) has not received any reports describing such an interaction with warfarin. This potential interaction requires prompt investigation, particularly in light of recommendations that emergency contraception be made available over the counter. If patients are fully anticoagulated with warfarin, the conventional Yuzpe regimen may be effective without being associated with any increased risk of venous thromboembolism.

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