Patient knowledge of colorectal cancer therapy side-effects

Patients with a recent diagnosis of colorectal cancer can be misled by incorrect information about the after-effects of treatment. Oncology pharmacists can support the patients and families in understanding their treatment.

Ilona Pirotta, BPharm (Hons)
Fifth-year student; Department of Pharmacy, University of Malta, Msida, Malta

Professor Anthony Serracino-Inglott
University of Malta

Dr Lilian M Azzopardi,
Associate Professor and Head of Department of Pharmacy, University of Malta

Alison Anastasi,
Assistant Lecturer, University of Malta

One of the highly specialised areas of practice that has gained substantial interest over the past few decades is oncology pharmacy. According to the Malta National Cancer Registry, colorectal cancer is reported to being the second most common neoplasia following breast and the second most common cancer death following lung cancer in Malta.1 When comparing the estimated age-standardised rates (European Standard) of colorectal cancer incidence per 100,000, Malta is slightly higher in females (36.2) and slightly lower in males (51.5) than the European average standard of 34.6 and 55.4 for females and males respectively.2

Provision of information is one of the most important responsibilities that pharmacists have in healthcare systems. Educating patients regarding the type of chemotherapy treatment and expected side-effects can provide a basic understanding of their treatment before initiation, and may improve their ability to cope with the disease.3 The present study was carried out at the Oncology Department, Sir Paul Boffa Hospital, Malta (at the day ward, and both the female and male patient wards), to evaluate the impact of side-effects related to colorectal cancer chemotherapy, and to assess the patients' knowledge and expectations prior to treatment.

Methodology
Locally, adjuvant chemotherapy involves weekly administration of 5-Fluorouracil (5-FU) bolus dose together with oral folinic acid (leucovorin), Oxaliplatin, 5-FU and leucovorin (FOLFOX) and irinotecan, 5-FU and leucovorin (FOLFIRI) are given as an infusion every two weeks in the metastatic setting.

Patient recruitment
A total of 66 Maltese newly diagnosed subjects with colorectal carcinoma, receiving either 5-FU, FOLFOX or FOLFIRI, were recruited from Sir Paul Boffa Hospital between June 2009 and January 2010. To be included in the study, participants had to be recently diagnosed, be Maltese citizens aged eighteen or older, and have the ability to give their consent. Patients were excluded if they were enrolled in clinical studies with an investigational product, if they were undergoing concomitant use of systemic or oral anticancer therapy other than 5-FU, FOLFOX or FOLFIRI, if they suffered from severe mental illness or cognitive impairment, and if they were...
pregnant or breast feeding. Ethics approval was granted by the University Research and Ethics Committee and written consent for participation was obtained from the patient. All patients were interviewed (IP) via questionnaires whilst they were waiting for their chemotherapy session.

**Data collection**

The questionnaire ‘Assessing the Patients’ Knowledge and Expectations regarding Chemotherapy Side-effects and Treatment’ was adopted from a local study carried out by Lanfranco in 2004. The questionnaire was administered on the first day of treatment before receiving their first dose of chemotherapy. The sources of chemotherapy related information used by patients were identified.

Another questionnaire, ‘Reporting Side-effects Experienced due to Treatment’, was adopted from the same study of Lanfranco.

This questionnaire was administered on three occasions: after the first, third and sixth cycle of chemotherapy treatment.

When reporting side-effects, the patient was asked to rate the severity from ‘not at all’ to ‘extremely’ on a Likert scale.

**Statistical analysis**

Data was analysed using the Statistical Package for Social Sciences software version 17.0. The Chi-squared test was used to determine the relationship between the sources of information used by patients on their treatment and the side-effects expected by the patient.

**Results**

From the 66 recruited patients, 22 patients did not reach cycle six for the following reasons: neo-adjuvant treatment (n=7), deteriorating health (n=4), life-threatening side-effects (n=4), deceased (n=3), rise in tumour markers (n=3) and refusal to participate on follow-up interviews (n=1). This resulted in 44 patients completing the study. A summary of patient characteristics is listed in Table 1.

**Assessing patients’ expectations of treatment and side-effects**

In the pre-treatment questionnaire, 16 patients (36.3%) out of the 44 patients interviewed claimed that they already had information about the drugs they were prescribed and 28 patients (63.6%) reported not being aware of the drugs they were about to be administered.

However, 36 (81.8%) patients knew about the possible side-effects of the drugs whilst eight (18.2%) did not. Regarding patient expectation of side-effects, 33 patients expected side-effects to occur (Figure 1) and 11 patients stated that they are unaware of any side-effects. The most common side-effects expected by the patients were diarrhoea (n=26, 78.8%), nausea (n=9, 27.3%) and peripheral neuropathy (n=5, 15.2%).

Patients were more likely to get information about their treatment from consultant oncologists rather than general practitioners and nurses (Figure 2). Conversely, there is a higher proportion of general practitioners rather than consultants and nurses who inform patients about side-effects; this association is significant and not attributed to chance. Patients did not seek information about their treatment and potential side-effects from pharmacists.

None of the patients tried to perform literature review, however, 31 (70.5%) of the patients stated that they desired further information about the use of chemotherapy drugs and side-effects.

**Reporting side-effects**

The most common side-effects experienced following cycle one were fatigue (68.2%), followed by sensory peripheral neuropathy (34.1%) and constipation (22.7%). This same ranking holds for cycle three, as fatigue was the most common side-effect reported (75%), followed again by peripheral neuropathy (68.2%) and constipation (38.6%). After the sixth cycle, fatigue (86.4%), peripheral neuropathy (56.8%) and diarrhoea (45.5%) were reported as being the most frequently experienced side-effects. A p-value of 0.002 showed that the incidence of diarrhoea increased significantly from cycle one (11.4%), through cycle three (29.5%) to cycle six (45.5%).

In the questionnaire, the mean severity in occurrence of side-effects was rated on a five-point scale. The higher the score, the higher the severity of the side-effect, for example, a severity score close to one corresponds to negligible severity, whereas a severity score close to five corresponds to extreme severity. The mean severity score of side-effects experienced by the 44 patients was 2.75 following cycle one, 2.86 following cycle three and 3.02 following cycle six. The severity score increases from cycle one to cycle three and increases further from cycle three to cycle six. A One-Way Analysis of Variance (ANOVA) revealed that the increment in the severity score is significant at all stages (p<0.05). This is most likely due to the cumulative effect of the chemotherapy drugs.

The side-effect with the highest mean severity score after cycle one was pain (3.33) followed closely by nausea (3.25), sore mouth (3.00) and pain at site of intravenous insertion (3.00). This ranking does not hold for cycle three as sore mouth had the highest mean severity (3.33), followed by fatigue (3.18), pain (3.00), hair-loss (3.00) and decreased appetite (3.00). After cycle six, decreased appetite (3.49), fatigue (3.34) and sore mouth (3.19) obtained the highest mean severities.
"A number of studies have shown that fatigue is the most frequent side-effect experienced by cancer patients, which is reflected in this study."

**Discussion**

Pharmacists are a point of referral for any problems that may arise regarding drug therapy, and with time pharmacists' contribution to patient care becomes more information-based and less distributive. Before initiating chemotherapy, the fact that 25% of the patients did not mention any side-effects and the remainder mentioned only the most common (diarrhoea and nausea) indicated the limited patients' knowledge of the full spectrum of side-effects associated with colorectal cancer chemotherapy. This lack of knowledge may contribute to anxiety and apprehension by patients and caregivers, since they do not feel in control. The expected side-effects most commonly cited by the patients do not correlate with the most frequently experienced side-effects, these being fatigue and sensory peripheral neuropathy, thereby evidencing a discrepancy between expectation and occurrence of side-effects. There was a significant increase in side-effects from the pre-treatment stage to those experienced after cycle one, three and six, indicating that side-effects occurred as a result of chemotherapy treatment.

Patients depended mostly on their consultants (64.8%) and general practitioners (45.5%) to obtain information about treatment and side-effects. This could be attributed to the fact that patients rely solely on what information is given to them in face-to-face consultations. This is also reflected in a study performed by Keller (2006), where less than half the sample size resorted to written information. It is therefore important for the oncology pharmacist to put forward a pro-active intervention, whereby information is presented to patients and caregivers.

A number of studies have shown that fatigue is the most frequent side-effect experienced by cancer patients, which is also reflected in the present study where 76.7% of patients experienced fatigue, followed by 53% that experienced sensory peripheral neuropathy. The latter is associated with oxaliplatin, demonstrating that most patients on FOLFOX did suffer from neurotoxicity. Nonetheless, fatigue was not reported to be the most severe, as is reflected in a study performed by Dikken (1998). In the latter study, mouth problems appeared to be the most serious and troublesome, and these ranked highly in severity. Similarly, mucositis reported to have one of the highest mean severity scores in the current study. The frequency of diarrhoea increased as treatment progressed, as was also evident in Dikken's study.

One of the limitations of the study was that some of the patients had to undergo more than six cycles of chemotherapy and their treatment was not assessed further. Also, patients receiving treatment in a private hospital setting were not included.

**Conclusion**

This study has highlighted the need for the pharmacists at the Oncology Hospital to consider patient therapy information as a priority care area.

A patient information booklet entitled 'Colorectal Cancer Treatment - Living through Chemotherapy' has now been compiled, validated and published with the intent of fulfilling patients' basic needs with regards to treatment. The booklet serves as a guide to the patient as pharmacological and non-pharmacological advice, follow-up care and support.

**References**


4. Lunnfranco C. Evaluation of information for patients receiving chemotherapy (dextranomer). Moda (Malta): University of Malta, 2004


