

Colorectal Cancer in Younger Patients – A Single Centre Analysis

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Abstract: Debate surrounds the nature of colorectal cancers in younger patients and whether they are more likely to present with aggressive disease. Pearson's correlation coefficient was used to examine whether a relationship exists between age and variables such as family history, mucinous tumours, metastases and final pathology. 41 patients under the age of 45 were diagnosed and operated for colorectal cancer between September 1998 and December 2010 in our centre. Nineteen patients were under the mean age of 35 years. There was no correlation between younger patients and metastatic disease ($r=-0.129$, $p=0.440$) or family history ($r=-0.258$, $p=0.123$). There was no correlation between age and Dukes staging ($r=-0.052$, $p=0.756$), tumour stage ($r=-0.110$, $p=0.516$), nodal status ($r=-0.053$, $p=0.751$), mucinous tumours ($r=0.104$, $p=0.569$) and cell differentiation ($r=0.046$, $p=0.787$). Overall mortality was 26% and of those who survived 10% have metastatic disease. Median survival was 26 months after surgery. Younger patients under 45 appear to be a homogenous group in relation to colorectal tumour characteristics. Further longitudinal studies to examine the differences between this group and older people are needed.

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Introduction

Colorectal cancer is the third most commonly diagnosed cancer and the second commonest cause of cancer-deaths in the UK. Although commonly perceived as a disease affecting older people, a recent UK study reported a 3% incidence of colorectal cancer in patients under the age of forty-five (McMillan and McArdle, 2009). Furthermore, it has been widely reported that patients under the age of forty tend to present with more aggressive disease and demonstrate a higher proportion of mucinous or poorly differentiated tumours (Minardi et al., 1998; Lin et al., 2005). In their review of the published literature, O'Connell et al. (2004) found that an average of 66% patients under forty presented with Duke's C or D lesions. Considerable debate continues on the long-term prognosis for this younger cohort. Previous reports have suggested that younger patients with colorectal cancer experience poorer outcomes than their older counterparts (Heimann et al., 1989; Minardi et al., 1998). However a study by Chung et al. (1998) revealed no difference in survival in patients under the age of forty compared to those above forty.

The aim of this study was to examine the hypothesized relationships between age and disease severity at our centre and to add to the growing debate surrounding younger patients diagnosed with colorectal cancer.

Methods

We reviewed all patients under 45 diagnosed with colorectal cancer and who were treated surgically between August 1998 and November 2010. Statistical analysis was performed using SPSS version 17 (Statistical Package for Social Sciences, Chicago, IL, USA). Age was dichotomized to under and over 35 years old to allow correlation with other variables. Ordinal data were dichotomized into clinically relevant (Dukes A and Dukes B/C), cell differentiation (poor/moderate and well). Pearson's correlation coefficient was used to examine whether a relationship exists between age and the above-defined variables along with family history, mucinous tumours and metastases. All patients who had a strong family history are usually referred for genetic counselling. The $p < 0.05$ threshold was used to indicate statistical significance, 2 tailed.

Results

41 patients under the age of 45 were diagnosed and operated for colorectal cancer between September 1998 and December 2010 in our centre. 55% were female. Nineteen patients were under the mean age of 35 years (range: 20–44, SD: 7.24) and the diagnosis of cancer followed an anticipated skew towards greater frequency as the age of the patient increased. Twenty patients had rectal cancer, 12 had right sided tumours, 6 had left sided tumours and 3 had transverse colon tumours. 68% were diagnosed with Duke C, 24% had Dukes B and 8% were diagnosed with Dukes A tumours. Three patients had metastatic disease at the time of presentation. After surgery most patients had adjuvant therapy.

Overall mortality was 26% and of those who survive 10% have metastatic disease. Mean survival was 51.8 months (range: 2–144, SD: 42.04), however there was a skew towards lower survival times and median survival was 26 months. On histology 31% were mucinous tumours. 95% were either moderately or poorly differentiated tumours.

Correlation between age and presentation

There was no correlation between younger patients and metastatic disease ($r=-0.129$, $p=0.440$) or family history ($r=-0.258$, $p=0.123$).

Correlation between age and pathology

There was no correlation between age and Dukes staging ($r=-0.052$, $p=0.756$), tumour stage ($r=-0.110$, $p=0.516$), nodal status ($r=-0.053$, $p=0.751$), mucinous tumours ($r=0.104$, $p=0.569$) and cell differentiation ($r=0.046$, $p=0.787$).

Discussion

This study examined the characteristics of colorectal cancer in younger patients over a 12 year period at our centre. We found a ratio of male to female patients of 1:1.2 and it is consistent with other reports (Lin et al., 2005). We found that a high proportion of patients had a Dukes C tumour which is consistent with other reports that younger patients have more advanced disease (Ganapathi et al., 2011). Mucinous tumours comprised 31% of tumours and this number is similar to other reports in the literature and may represent more aggressive disease (Papadopoulos et al., 2004). Debate still exists surrounding age as an independent factor to poor prognosis and some authors have argued that it is due to the time taken to diagnose the condition as the index of suspicion is low. Furthermore this may improve as a result of greater awareness of this condition in younger patients (Chung et al., 1998). The time to diagnosis was not recorded in our study and may be an important area to investigate in future studies.

We did not find that there was a correlation between our cohort of younger patient's age and Dukes staging, metastatic disease, family history, mucinous tumours or cell differentiation. Our correlation analysis was limited to the subsection of younger patients who were treated surgically only and reflects the lack of differences amongst this considered cohort; it is consistent with reports that those patients under 45 have similar characteristics (Griffin et al., 1991).

Our study adds to the continuing debate and highlights the need for ongoing longitudinal studies to characterise tumours that may potentially have a different natural history to tumours presenting in older people. We would advocate a more concerted effort within the surgical community to collect data on younger patients with colorectal cancer so that we can identify epidemiological trends.

Conclusion

Younger patients under 45 who were treated surgically appear to be a homogenous group in relation to colorectal tumour characteristics. Further longitudinal studies to examine the differences between this group and older people are needed.

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