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The Surgeon, Journal of the Royal Colleges
of Surgeons of Edinburgh and Irelandwww.thesurgeon.net

The association between referral source and outcome in patients with colorectal cancer

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ARTICLE INFO

Article history:

Received 29 February 2012

Accepted 10 October 2012

Available online 11 December 2012

Keywords:

Colorectal cancer

Referrals

Two-week rule

Fast track clinic

Survival outcomes

ABSTRACT

Aim: The colorectal two-week wait fast track (FT) referral system was nationally implemented in the UK in 2000 to ensure patients with colorectal cancer (CRC) received prompt access to specialized services. The aim of this study was to determine the association between the mechanism of referral to colorectal services and the 5-year outcomes for patients with CRC. **Methods:** Consecutive patients with newly diagnosed CRC presenting between October 2002 and September 2004 were identified retrospectively. Analysis for survival and recurrence of disease at 5 years from presentation was undertaken. Outcomes for patients were compared between fast track (FT), non-fast track (NFT) and emergency referral (ER) routes, using Kaplan–Meier survival estimates.

Results: Out of 189 patients, 96 (51%) presented via the FT, 41 (22.5%) via the NFT and 52 (27.5%) via the ER referral route. The 5-year overall survival was $52.6\% \pm 5.1$, $41.5\% \pm 7.7$ and $38.5\% \pm 6.7$ for the FT-, NFT- and ER groups respectively ($p = 0.075$). The 5-year cancer specific survival was $60.3\% \pm 5.2$, $58.8\% \pm 5.3$ and $43.5\% \pm 7.2$ for the FT-, NFT- and ER groups respectively ($p = 0.056$). Patients referred as emergencies had worse 5-year overall survival; $49.3\% \pm 4.3$ (FT&NFT) vs. $38.5\% \pm 6.7$ (ER) ($p = 0.042$) and 5-year cancer specific survival $59.8\% \pm 4.4$ (FT&NFT) vs. $43.5\% \pm 7.2$ (ER) ($p = 0.016$). A total of 136 patients (FT $n = 71$, NFT $n = 34$, ER $n = 31$) underwent potentially curative surgery. Differences in 5-year survival did not reach statistical significance in these patients.

Conclusion: Referral route to specialist services for patients with CRC via the fast track pathway compared to non-fast track pathway was not associated with improved survival.

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Introduction

Colorectal Cancer (CRC) is the third most common cancer in the UK, with nearly 40,000 people being newly diagnosed each year.¹ It is the second leading cause of cancer death in the UK and Europe with 16,260 and 207,400 deaths per year respectively.^{1,2}

To ensure that patients with suspected CRC have swift access to cancer specialist services, the two-week wait fast track referral pathway was set up with the intention of identifying over 80% of patients with bowel cancer for prompt referral.³ This followed the issue of mandatory targets for the referral and management of CRC by the UK Department of Health in 2000.⁴

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<http://dx.doi.org/10.1016/j.surge.2012.10.004>

Not all patients present to colorectal surgeons through a fast track referral pathway; some continue to present as emergencies and others as non-cancer referrals to both colorectal surgeons and non-colorectal specialists.

Our colorectal unit is part of an inner-city teaching hospital. We have previously reported a comparison of patients referred via fast track (FT), non-fast track (NFT) and emergency referral routes (ER), and demonstrated a significant delay in the diagnosis and initiation of treatment in the NFT group. This was not, however, associated with a more advanced stage of disease at presentation or a reduction in potentially curative surgery for the NFT or ER group. The previous study found there to be no significant difference in, demographic distribution, cancer site or stage of disease between the three referral groups.

It might be expected that patients referred via the fast track pathway who have an earlier specialist review and initiation of treatment should have a better long-term survival. The aim of this study is to compare long-term outcome data for CRC patients referred via fast track, non-fast track and emergency routes. This paper presents the 5-year survival of our previously published data.⁵

Methods

Patients

All consecutive adult patients with CRC presenting to a single hospital between October 2002 and September 2004 were identified retrospectively from the colorectal unit's local cancer database. This included all CRC patients presenting as an emergency as well as those patients presenting through FT (see Table 1 for criteria) and NFT outpatient referral. Emergency patients included all patients referred by their general practitioner or via the emergency department, to either medical or surgical services, who were later established to have CRC.

Measured variables

Our previously published data was revisited. Data for overall survival, cancer specific survival and recurrence of disease at 5 years from presentation was obtained. Disease free survival was defined as time from potentially curative surgery until clinical evidence of recurrent disease (i.e. CT scan) or death due to any cause. Patients, who were lost to follow up before

having documented evidence of recurrent disease, were censored at the date of their last documented hospital visit. In the Kaplan–Meier graphs, censored data is depicted as short vertical lines.

Statistical analysis

The data was analysed to determine any association between referral source, demographics, pathological findings and long-term outcome. Survival data was calculated by the Kaplan–Meier estimate. The estimated proportion of patients surviving and average survival time in months is given with standard error. The Log rank (Mantel–Cox) test was used to compare survival between all three patient groups. Each of the three groups was then individually compared to the other two using the Bonferroni correction. Data for the individual comparison is not shown because it did not differ from the multiple group analysis. For comparison of categorical data (gender distribution, site of malignancy, potentially curative surgery) by referral route, Pearson's chi-square test was used. Age by referral group as a continuous variable was compared with one-way ANOVA. Statistical analyses were performed using SPSS 17.0 (SPSS Inc., Chicago, IL). Statistical significance was assumed to be present if $p < 0.05$.

Results

From the original cohort of 193 patients, data on four patients was not available for analysis (including censoring); one from the FT group, one from the ER group and two from the NFT group. Of the remaining 189 patients, 93 were male and 96 were female, with a median age of 73. Of the 189 patients, 96 (50.8%) had been referred via the FT route, 41 (21.7%) by NFT and 52 (27.5%) by emergency referral (ER). Comparison of the three groups found no difference in gender, age, tumour site or stage of disease at first presentation (see Table 2). Patients from the ER group were less likely to undergo a potentially curative surgery. This observation is in contrast to our previous article; the discrepancy between these findings can be attributed to the four patients lost to follow up, all of whom did not undergo potentially curative surgery.

Outcome of patients treated with curative and non-curative intent

The estimated proportion of patients surviving 5 years was $52.6\% \pm 5.1$ for the FT group, $41.5\% \pm 7.7$ for the NFT group and $38.5\% \pm 6.7$ for the ER group. Mean overall survival time in months for patients in the FT-, NFT- and ER group was 40.6 ± 2.3 (CI 36.0–45.1), 36.9 ± 3.5 (CI 29.9–43.8) and 30.1 ± 3.5 (CI 23.2–37.0) respectively. There was no difference in 5-year overall survival between the three groups ($p = 0.075$, Fig. 1)

Estimated proportion for 5-year cancer specific survival was $60.3\% \pm 5.2$ for the FT group, $58.8\% \pm 5.3$ for the NFT group and $43.5\% \pm 7.2$ for the ER group. Mean cancer specific survival time in months was 43.5 ± 2.3 (CI 39.0–48.0), 43.7 ± 3.5 (CI 36.7–50.6) and 33.7 ± 3.6 (CI 26.7–40.8) for patients in the FT-, NFT- and ER group respectively. There was no difference

Table 1 – Fast track criteria for colorectal cancer.

Symptoms and signs meeting colorectal fast track criteria

1. Persistent rectal bleeding without anal symptoms (age > 60 years)
2. Change in bowel habit for at least 6 weeks (age > 60 years)
3. Rectal bleeding with change in bowel habits (minimum 6 weeks)
4. Palpable right iliac fossa mass
5. Palpable intraluminal rectal mass
6. Unexplained iron deficiency anaemia (men Hb < 11 g/dl, women Hb < 10 g/dl)

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