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Causes of late diagnosis in cases of colorectal cancer seen in a district general hospital over a 2-year period

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Our aim in this prospective study was to identify those patients who were found to have a colorectal cancer after a delay we considered unacceptable; this was taken as 6 months or more from initial presentation to a physician to diagnosis. It was then possible to determine the presenting complaints (always multiple) and the reasons for delay, in the hope that recommendations could be made regarding appropriate, rapid and thorough investigation of patients suspected of having a colorectal cancer. Of the total of 141 patients with colorectal cancer (108 elective, 33 emergency cases) under the care of one consultant during the period studied, 17 patients (12%) (10 men and 7 women), satisfied the criteria for late diagnosis. The mean age was 72.4 years (range 43–86 years). Five common presenting complaints were identified. They were, symptomatic iron deficiency anaemia, rectal bleeding, change in bowel habit, abdominal pain and weight loss.

Incomplete imaging of the colon in patients with sinister presenting symptoms was the most commonly identified factor in delay of diagnosis. Inappropriate iron therapy and false-negative reporting of double contrast barium enema investigations were both seen in a number of cases. Other causes were, inappropriate surgical treatment and both clerical error and delay.

The mean time for delay was 17.6 months (median 15 months). Late diagnosed cancers were most commonly found in the caecum and least commonly in the rectum. Colonic tumours of each Dukes' stage were identified, Dukes' B most common and Dukes' A least.

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Colorectal cancer is a relatively common condition, the incidence of which is about 16/100 000 cases per annum in the United Kingdom *(1)*. Health care professionals in virtually all specialties will encounter it from time to time. It is a condition which as well as being common is potentially curable with surgery. The common presenting complaints of colorectal cancer are all well known, but are also symptoms associated with benign colorectal disease. Rigorous investigation of the colon and rectum for all patients with any symptoms without proper assessment is, of course, inappropriate, but in those whose symptoms are particularly sinister or who have more than one complaint when questioned closely should be investigated without delay, in particular those with advancing age or with a family history of colorectal cancer.

Materials and method

The data for this prospective study were obtained from the notes of patients who had a colorectal cancer diagnosed by a single-handed general surgeon in a district general hospital between November 1994 and October 1996.

Those considered to be diagnosed late were patients who had cancers detected 6 months or more after their first attendance to either their general practitioner or district general hospital.

Information collected regarded their age and sex, their presenting symptoms and the time taken from presentation to diagnosis. The site of the cancer and the Dukes' stage classification of the tumour after resection, when possible, were also recorded.

Results

Of a total of 141 patients seen with a colorectal cancer (108 elective, 33 emergency cases) 17 (12%), satisfied our criteria for late diagnosis, identified over a period of study of 2 years. Ten men and seven women were identified, with a mean age of 72.4 years (range 43–86 years; median 74 years).

The mean time to diagnosis was 17.6 months (median 15 months).

The most common of the presenting complaints in the cases identified was iron deficiency anaemia, seen in nine patients (53%, 6M:3F); next was rectal bleeding (eight patients, 47%, 3M:5F). This agrees with existing published work available quoting the more common presenting complaints of colorectal cancer *(1)*. Abdominal pain (six patients; 35%, 4M:2F) was next most commonly identified, then change in bowel habit (five patients, 29%, 2M:3F) and least commonly weight loss (two patients, 12%, 2M:0W).

There were many reasons for late diagnosis, but most commonly it was found that incomplete imaging of the colon in patients with suspicious symptoms (five patients, 29%) was to blame. False-negative reporting of double contrast barium enema examinations, five patients (29%) and inappropriate medical treatment (with oral iron supplements for iron deficiency anaemia) three patients (18%) made up most of the other causes of late diagnosis. Clerical error, diagnostic delay, inappropriate surgical treatment and operator error each accounted for one case (6%) among those studied.

The most common site for late diagnosed colorectal cancer was the caecum (nine patients, 53%), followed by descending colon (four patients, 26%), rectum (three patients, 18%) and ascending colon (one patient, 6%).

Histological classification of resected tumours among those detected were as follows: Dukes' A, one patient (7%) of all resected tumours; Dukes' B, seven patients (50%); Dukes' C, two patients (14%); Dukes' D, four patients (29%).

The Dukes' stage classifications of 3 (18%) of the cases were unavailable, one patient died of a myocardial infarction before surgery and details of the other two patients were lost.

Discussion

Delayed diagnosis of colorectal cancer in the group studied occurred in both men and women across a wide age range (43–86 years). The presenting complaints:

1 Iron deficiency anaemia;
2 Rectal bleeding;
3 Weight loss;
4 Change in bowel habit;
5 Abdominal pain;

are those most often quoted in the literature *(1)* to be associated with colorectal cancer and should all be well recognised throughout medical practice generally, particularly in patients over 70 years of age *(2,3)*. Attending doctors have been quoted as the cause of delay in up to 47% of all cases of late diagnosis of colorectal cancer *(4)*; in these cases either treatment has been inappropriate or onward referral delayed. Non-bleeding abdominal symptoms (nos 3 to 5 above), have been found to have almost as high a yield in detection of colorectal cancers as bleeding symptoms (nos 1 and 2 above) *(5)*; this suggests that symptoms which may appear non-specific may be as frequently associated with colorectal cancer as those often more intensely investigated.

The time delay in diagnosis of colorectal cancer after seeing a doctor in this group was a mean of 17.6 months, this contrasts with the average time delay for 100 consecutive cases of colorectal cancer detected in one study reported in 1979 *(6)*, which stated that for all comers delay was found to be 5.1 and 4.1 months for colonic and rectal cancers, respectively. Delay may well influence the stage of the disease (as specified by Dukes' classification) at tumour resection and hence the need for adjuvant treatment modalities and overall survival rates *(4)*, although not all reports confirm this *(7)*.

When evaluating the reasons for late diagnosis of colorectal cancer in this study several important points are raised. The most important cause was that of incomplete imaging of the whole colon. A complete colonoscopy can usually be obtained by a skilled endoscopist (98.8% complete, corrected for poor preparation and obstructing lesions is quoted *(8)*, 97% for all comers in our experience), when the result of a double contrast barium study is unsatisfactory, or as a first line investigation. When neither method yields a completely confident result, other investigations such as computerised tomographic or isotope scans may be used, particularly if clinical suspicion remains high. The sensitivities of barium enema and colonoscopy in detecting colorectal cancer have recently been quoted as 82.9% and 95%, respectively *(9)*. There was no significant difference found in sensitivity for barium enema between either side of the colon.

False-negative reporting of double contrast barium studies (all by consultant radiologists) accounted for 29% of cases of delayed diagnosis; on retrospective review 40% (two out of five) were thought to have suspicious features. In a recent review of malpractice suits involving radio-opaque colonic evaluation, 17 out of 18 missed cases were seen with retrospective assessment *(10)*. In another study, it was also recommended that films were reviewed either on two separate occasions or by two radiologists to improve the sensitivity of the investigation *(11)*. A radiological examination such as this will usually reveal significant colonic lesions, but polyps may commonly be missed. Therefore, it is recommended that a colonoscopy is performed in cases of unexplained rectal bleeding.

The most common presenting complaint of iron deficiency anaemia seen in 10 of 17 cases (59%) in the study illustrate that all patients affected require endoscopic imaging of the upper and lower gastrointestinal tract, particularly if treatment of one identifiable cause

does not result in improvement of the anaemia once iron therapy is withdrawn *(1)*. Of the patients, 18% underwent medical therapy with oral iron supplementation for prolonged periods without proper investigation.

Other causes of diagnostic delay were:

1 Clinical error; a patient with a suspicious lesion seen on double contrast barium examination missed an outpatient appointment and was lost to follow-up for 24 months.
2 Inappropriate surgical treatment of rectal bleeding by repeated sclerotherapeutic injection of haemorrhoids without improvement in symptoms delayed further investigation.
3 Unacceptable delays between referral and assessment and multiple investigations of an iron deficiency anaemia resulted in an 8 month delay between presentation and diagnosis for one patient.
4 The result of imaging of the whole colon by double contrast barium study was not seen before surgery for a low rectal tumour, this revealed a small metachronous lesion in the caecum which was not palpated at operation.

Caecal tumours were the most common late diagnosed tumours in this study. This illustrates two points, first that the caecum is the most proximal part of the large bowel and therefore would appear to be the most difficult to image satisfactorily either endoscopically or radiologically and, second, that the presenting complaint in seven of nine cases of carcinoma of the caecum was iron deficiency anaemia, often wrongly treated medically without appropriate or adequate imaging. Other missed tumours were distributed throughout the colon, three of which were rectal and might well have been seen on adequate rigid sigmoidoscopic examination. The proportion of tumours found at an early histological stage (when available) in this study of late diagnosis did not differ from the findings described by Dukes in his original papers for all tumours, when one allows for the small number of patients. Dukes found that histologically grade A tumours accounted for 15% of the total (7% of those with available histology in our study), Dukes' B 40% (50% in our study) and Dukes' C 45% (43% (Cs and Ds) in our study). Although the proportion of Dukes' A grade tumours is lower, the small number of cases does not confirm that fewer are at an earlier histological stage when diagnosed late.

The presence of a family history of colorectal cancer adds weight to the need to fully and appropriately investigate symptoms suggestive of colorectal pathology. The effect of family history is greatest for younger people with suspicious symptoms when assessing their risk of having colorectal cancer. This risk increases as the number of affected relatives increases and their age at diagnosis decreases *(12)*.

Conclusions

1 A negative double contrast barium study does not always exclude a colorectal carcinoma.
2 An equivocal radiological assessment with unexplained symptoms should be reviewed by surgeon and radiologist.
3 Unexplained rectal bleeding should be investigated by colonoscopy. Where resources do not allow, flexible sigmoidoscopy and double contrast barium enema examination is an alternative.
4 Iron deficiency anaemia in the middle-aged or elderly always requires urgent endoscopic evaluation of both upper and lower gastrointestinal tracts.
5 Delays in referral and cancellation of investigations may prejudice outcome.
6 Surgical and medical treatment without resolution of symptoms should not delay further investigation.
7 Full preoperative imaging of the colon is preferable if technically possible.
8 Full intraoperative colonic palpation is mandatory.
9 Family history of colorectal cancer is a significant increased risk factor necessitating increased vigilance when investigating suspicious symptoms.

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