Colorectal cancer and its delayed diagnosis: have we improved in the past 25 years?

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ABSTRACT

Objective: to determine the current delay in diagnosing colorectal cancer (CRC) and establish whether there has been any improvement in the past 25 years in the same healthcare setting using the same methods.

Patients and method: 152 patients undergoing surgery at our unit were personally interviewed during their hospital stay to determine the delay incurred for the diagnosis and treatment of their CRC. SPSS software was used for univariate and multivariate analysis of the data obtained.

Results: the study population was comprised of 152 patients of mean age 71 years (SD 10; range 36 to 90 years), 82 men and 70 women (53.9 and 46.1% respectively; p > 0.05). The diagnostic delay for CRC at our unit currently runs at 7.28 months despite the fact that in 58% of patients the disease produced obvious symptoms such as rectal bleeding. Although this delay in diagnosis is reduced over that observed 25 years ago, the difference is statistically not significant in terms of both doctor-attributed or patient-attributed delay (doctor-attributed delay was 3.28 months in 1985 versus 1.89 at present and patient-attributed delay was 3.18 months versus today’s 2.75; p > 0.05). Unlike the situation 25 years ago, no link was detected between diagnostic delay and tumor stage. Paradoxically, stage D disease was diagnosed earlier (at 5.71 months) than stage A disease (at 11.16 months) (p < 0.05).

Conclusion: the diagnostic delay for CRC at our centre is 7.28 months. This delay is excessive for a disease that produces evident symptoms in 90% of patients. Over the last 25 years little improvement has been noted in the overall delay in diagnosing CRC, although the delay attributed to the care provider has significantly improved. No relationship was detected between diagnostic delay and disease stage upon diagnosis. We feel the high prevalence of CRC, the failure of campaigns to increase awareness of early symptoms and no real improvement in its prognosis justify the introduction of large-scale colonoscopy screening for this disease.

Key words: Colorectal cancer. Diagnostic delay. Prognosis. Screening.

INTRODUCTION

Adenocarcinoma of the colon and rectum is one of the most prevalent cancers in western countries (1-4). The clinical course of disease is highly variable and starting symptoms range from vague, non specific symptoms such as diffuse abdominal pain, altered bowel habits and changes in the shape of stools to the more spectacular symptom of rectal bleeding (5,6), which should activate alarm signals in both patient and doctor.

Surprisingly, the prognosis for patients with colorectal cancer (CRC) has hardly changed in the past few decades (7-9) despite considerable advances made in diagnostic tests and treatment. It has been unanimously admitted that the main prognostic factor for this disease is its stage at the moment of diagnosis (9).

Several researchers have tried to correlate tumor stage and thus its prognosis with the delay that exists between the start of symptoms and diagnosis and treatment. Results so far have been varied and contradictory. Thus, some authors conclude that there is correlation between a greater delay and a more advanced tumor stage (10-12), while according to others, this relationship only holds for tumors of the rectum (13-15) and some have been unable to find any relationship at all (9,16-26).
In 1985, a study was conducted at our centre (27) in which the diagnostic delay for CRC was addressed according to whether the delay was patient-attributed, doctor-attributed or attributable to the diagnostic tests requested. The present study was designed to compare these results obtained 25 years ago with the current situation.

PATIENTS AND METHODS

Over the period 2007 to 2009, we personally interviewed 152 patients admitted to our hospital unit for the surgical treatment of CRC. These interviews were conducted by three attending physicians of our unit and were designed to determine the cumulative delay incurred in the diagnosis and treatment of their CRC. This delay was classified into the categories:

1. Patient-attributed delay: the time elapsed since the patient first noticed evident signs of CRC until the first consultation with the general practitioner.
2. Doctor-attributed delay: this was taken as the time since the first time the GP was consulted to the time any test targeted at diagnosing CRC was requested.
3. Diagnostic delay: the time taken for the tests requested by the GP.
4. Intervention delay: from the time of diagnosis and a complete study of tumor extension until treatment was conducted.
5. Overall delay: the sum of all the above delays.

For the statistical analysis, the data for categories 3 and 4 were considered as a single category designated delay attributed to tests.

Besides this information, data were also collected on variables such as symptoms, tumor site, emergency or elective surgery and its intention (curative, palliative or non-resectable) and anatomopathological tumor stage.

Tumor site was divided into the groups: right colon (including the ascending and transverse colon), the left, or descending colon, the sigmoid colon and rectum.

For tumor staging, Dukes’ classification was used since this was the system used in the 1985 study.

Of all the patients attended at our unit over the period 2007 to 2009, 152 were enrolled in this study after excluding: patients in whom it was difficult to undertake an anamnesis, patients re-operated on due to local tumor recurrence who were being followed by us, those with CRC diagnosed in a screening campaign and those refusing to participate in the study.

All data were collected in a database specially designed for this study. Data were compared by ANOVA or a Student’s t-test. All tests were performed using the SPSS 15.0 program. The level of significance was set at p < 0.05.

RESULTS

Of the 152 patients included, 6 were diagnosed and underwent surgery on an emergency basis due to intestinal obstruction caused by a stenosing neoplasia in the colon or rectum. In the remaining patients, surgery was elective.

The mean age of the patients was 71 years (SD 10, range 36-90 years). Eighty two of the patients were men and 70 women (53.9 and 46.1% respectively; p > 0.05).

In 90.8%, some type of symptom was observed, among which we would highlight rectal bleeding in 58.6%, altered bowel habits in 35.5%, asthenia in 26.3% and abdominal pain in 23%. Patients showing no symptoms were not derived from any screening program; most were elderly subjects who during a prolonged hospital stay had been subjected to colonoscopy due to chronic anemia, which produced no recognizable symptoms.

The mean diagnostic delay was 7.28 months (SD 8.55) and means for the different categories were: patient-attributed 2.75, physician-attributed 1.89 and testing delay 2.64 months.

Data on the relationship between delay and tumor site or the possible repercussions of delay on tumor stage are provided in tables I and II, respectively.

Among the tumor sites considered, the rectum was associated with the greatest delay although the difference was not significant. For correlations between tumor stage and diagnostic delay, results were also non significant and paradoxically a reduced diagnostic delay was related to a the more advanced tumor stage, stage D, while stage A was linked to a greater delay.

It should be mentioned that among the patients with rectal cancer who received neoadjuvant radio-chemotherapy, the anatomopathological study of the specimens revealed tumor sterilization in 4 cases (10% of the rectal tumors treated with neoadjuvant radio-chemotherapy).

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<th>Table I. Relationship between diagnostic delay and tumor site</th>
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<th>Table II. Relationship between diagnostic delay and Dukes’ tumor stage</th>
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<td><strong>Delay</strong></td>
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The numbers of patients assigned to each Dukes’ stage by tumor site are provided in table III.

We compared the diagnostic delay recorded with that reported in 1985 in the same healthcare setting and using the same methods. The differences detected are illustrated in figure 1 (A and B), which indicate the changes in delay and Dukes’ stages, respectively. The only variable that was significantly modified was physician-attributed delay, which has dropped from 3.28 to 1.89 months. In addition, there has been an increase in the proportion of cases diagnosed at stage A to the detriment of tumors diagnosed in stage B, with no variation in the number of tumors diagnosed at the more advanced stages C and D over these 25 years.

Finally, the results of our analysis of the relationship between rectal bleeding and diagnostic delay appear in table IV.

**DISCUSSION**

The mean diagnostic delay for CRC in our hospital setting was estimated here at 7.28 months. We consider this figure excessive for the second most common type of cancer and the leading cause of death in the western world and third cause of death worldwide, second only to lung and stomach cancer (2). However, it is even more surprising than in the past 25 years, despite clear improvements in patient access to medical information (28), diagnostic techniques and their availability, no measures taken have proved efficient for the prevention and/or early diagnosis of CRC, since there has been little change in its diagnostic delay (29-31). These data suggest a need for greater information both for the general public and for primary care providers on the symptoms that should prompt a suspicion of a tumor in the colon or rectum, and of measures to be taken when these symptoms arise.

Some variation was detected in tumor stage on diagnosis when we compared the 1985 data with the present data. However, considering that stages A and B indicate local disease and stages C and D indicate advanced disease, no significant variation has been produced over these 25 years.

Whether a patient survives colorectal cancer is closely linked to the extent of disease spread such that the change observed here in tumor stage upon diagnosis would not be expected to translate to a change in overall prognosis.

When we examined the possible relationship between Dukes’ tumor stage and diagnostic delay, which in 1985

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<th>Table III. Patient distribution by tumor site and Dukes’ stage</th>
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<th>Table IV. Relationship between rectal bleeding and diagnostic delay</th>
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**Fig. 1. Differences observed between 1985 and 2009. A. Diagnostic delay in 1985 versus 2009. B. Distributions of Dukes’ tumor stages in 1985 versus 2009.**
proved to be significant with a more advanced tumor stage as the diagnostic delay increased (27), no significant differences were observed (p > 0.05). This point has been widely disputed in the literature since the results of the many studies that have addressed this issue have been contradictory (9-26). Thus, some authors have reported significant differences while others admit this relationship only for tumors of the rectum and not the colon.

A diagnosis, albeit early, in the symptomatic phase of the disease has so far proved insufficient to improve its prognosis. In contrast, screening to identify patients in an asymptomatic phase does seem to have beneficial impacts and all the strategies tested to date have also proved cost-effective (33-36). The benefits of such campaigns besides increasing the number of diagnoses made in less advanced stages of the disease with the consequent repercussions on survival (37-51), also include a reduction in the incidence of CRC (32,37,52-55). Thus, some reports have cited incidence reductions of 75 to 90% along with savings of the costs arising from disease treatment (52,56).

Besides the link between Dukes’ tumor stage and diagnostic delay, in this study we examined the relationship between diagnostic delay and the presence or not of rectal bleeding. It is striking that in our patient cohort, among those with this obvious symptom clearly associated with malignancies of the lower digestive tract, some 70% did not receive adequate treatment before three months. The most plausible explanation for this is the common misinterpretation of bleeding as that of a benign anorectal condition, mainly hemorrhoids, given the high prevalence of this disease (9,19). The correct interpretation of this symptom could be key if it is eventually demonstrated that a timely diagnosis will mean a less advanced tumor stage and thus a better prognosis.

Our findings point to a need to improve the awareness of both the general and medical (57) population about the need to initiate appropriate tests as quickly as possible in patients with symptoms of CRC to expedite the diagnosis of this disease. Since early diagnosis programs have so far failed to significantly increase the number of patients identified in early disease stages (58-66), it seems that screening campaigns hold greatest promise. In our opinion, the method of choice for such campaigns is colonoscopy (67,68) because of its high sensitivity (close to 100%), the possibility of removing polyps avoiding their malignant degeneration, its safety, including a minimum acceptable number of complications (42,69), and a high degree of reported patient satisfaction (70).

Thus, a large part of our efforts in the battle against colorectal cancer should focus on implementing widespread screening programs.

CONCLUSIONS

– The diagnostic delay for CRC at our centre is currently 7.28 months, which we consider excessive for a disease that produces symptoms in 90% of affected patients.

– In elderly patients, the finding of persistent anemia should alert the physician of a need for an endoscopy study.

– Although rectal bleeding is the most frequently reported symptom affecting up to 58% of patients, its presence does not result in a shortened diagnostic delay. We detected no relationship between diagnostic delay and tumor stage although we think there is a need for further work on this issue given the conflicting data available in the literature.

– Given that an early diagnosis and improved prognosis of colorectal cancer should be a clear objective, patient education campaigns should be intensified to increase general awareness of the problem and adherence to screening campaigns. Indeed, such screening campaigns are common practice in some European countries and North America (71-74).

REFERENCES


