

Factors associated with the delay in the diagnosis of colorectal carcinoma

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ABSTRACT

Introduction: Delay in diagnosing colorectal carcinoma results in an increase in morbidity and mortality.

Methods: Data from 155 consecutive colorectal cancer patients presenting to the unit from December 2016 to June 2020 was included in the study. Data were collected using a structured pre-tested questionnaire. Specific symptoms, time gap from the first symptom to the first consultation and the time taken from the first consultation to diagnosis (diagnostic delay) were recorded. Non-parametric tests were used to study the significance of the associations between the delay and associated factors.

Results: The median delay in presentation and the median diagnostic delay of the doctor were both 2.0 months. The corresponding mean delays were 3.7 months and 2.4 months respectively. 79.2 % of patients first presented to allopathic medical services. The first doctor consulted referred only 30.1 % of the patients for lower alimentary endoscopy. On average, a patient consulted 3 doctors before diagnosis. There was no significant association between patients' age, gender, educational level, occupation and delay in presentation ($p>0.05$). Rectal bleeding was not associated with reduction of delay in presentation or diagnosis ($p=0.5$). Diagnostic delay was greater in patients who had abdominal pain (median 2.0 months) than those who did not have pain (median=1.0 month), and the difference was statistically significant ($p=0.03$). There was no association between the delay and tumour site or tumour stage at diagnosis ($p>0.05$).

Conclusions: Delay in presentation and diagnostic delay both contribute to the delay in the diagnosis of colorectal carcinoma. Delays could be decreased by early referral for endoscopy by first contact doctors and increasing the awareness on colorectal cancer symptoms among the public.

Keywords: *Colorectal carcinoma, Diagnostic delay.*

Introduction

There is an increase in the incidence of colorectal carcinoma (CRC) in the South Asian region (1). The 5 years survival rate of colorectal carcinoma varies from 90% for early cancers to 15% for advanced tumours (2). Hence, early diagnosis of CRC is vital for the proper management of the disease. Reducing the delay in diagnosis of

colorectal cancer is important as it will have an impact on the treatment modalities, outcomes and the healthcare costs of the country. Patients with colorectal carcinoma present with nonspecific symptoms, and these symptoms may be ignored by patients or misdiagnosed by doctors. According to the National Institute for Health and Care Excellence (NICE) referral guidelines for suspected

cancer, patients presenting over the age of 50 years with unexplained rectal bleeding or over the age of 60 with iron deficiency anaemia or changes in their bowel habits should be referred using a suspected cancer pathway referral (3). However, if such referrals are not made by first contact doctors, the delay in diagnosis is inevitable. This paper intends to present the delay in the diagnosis of colorectal carcinoma within a cohort in Sri Lanka and the factors associated with the delay.

Methods

Data of CRC patients (N=155) were collected prospectively from December 2016 to June 2020 using a structured pre-tested questionnaire. Patient delay and diagnostic delay were assessed separately. The delay from first noticing of symptoms to presentation to a hospital was defined as patient delay. The delay from presenting to a hospital to the diagnosis of colorectal carcinoma was defined as diagnostic delay. Descriptive statistics were used to calculate the median delays. Details of tumour at diagnosis were obtained from the radiological and pathological reports of the patients. SPSS™ 2020 software was used for data entry and statistical analysis. Nonparametric tests were used to study the significance of the associations as graphical analysis of the delays showed a skewed distribution. The Mann-Whitney U test was used for dichotomous variables and Kruskal-Wallis's test was used for variables with more than two categories.

Results

Out of the 155 patients, 100 (64.3%) were males. Age range was from 38 to 91 years (mean - 58.7 years). The percentage of patients <50 years, 50 -70 years and >70 years were 17.4%, 70.8% and 11.8% respectively. Of the patients, 88.8% (n=136) were married; 42.2% had received secondary education and 9.1% higher education. In our cohort, 79.2% of patients first presented to western (allopathic) medical services and 16.2% of patients first presented to indigenous medical services. The mean number of doctors consulted was 3.4. The number of total doctors consulted varied significantly with occupation ($p=0.05$). Those in business/ self-employed sector consulted the

most number of doctors (mean 4.09) followed by those doing clerical jobs (mean 3.93). Only 30.1% of the patients were referred for endoscopy by the doctor who was first consulted while 36.6% and 19.6% were referred by the second and third doctor respectively.

The presenting symptoms and tumour stage are shown in Table 1.

Most of the patients had carcinoma of the rectum (36.6%) followed by carcinoma of the sigmoid colon (22.2%).

Both the patient delay in presentation and doctor's delay in diagnosis had a median of 2 months. The corresponding mean delays were 3.7 months and 2.4 months respectively. In only 9.5% of the patients, patient delay at presentation was more than 6 months and in 6.5% of patients, doctors' diagnostic delay was more than 6 months. Histogram on Figures 1 and 2 summarize patient delay and doctor's delay.

Table 1: Clinical characteristics and tumour stage of the patient sample

Clinical Characteristics	Percentage (%)
Presenting symptoms	
Rectal bleeding	82.5
Abdominal pain	76.3
Incomplete evacuation	75.8
Diarrhoea	74.7
Tumour stage	
Stage 1	15.8
Stage 2	31.6
Stage 3	3.0
Stage 4	9.6

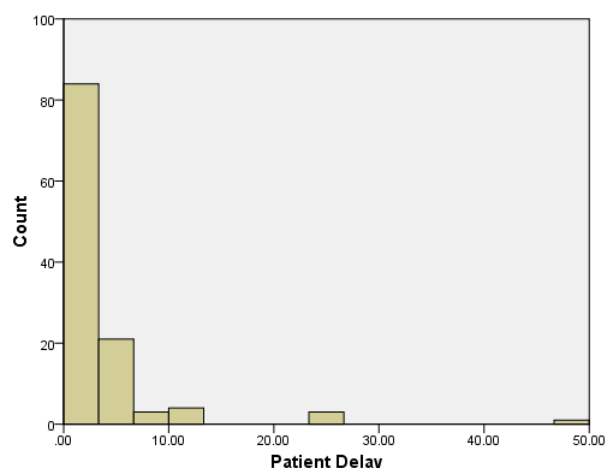


Figure 1: Patient delay contributing to a delay in diagnosis (months)

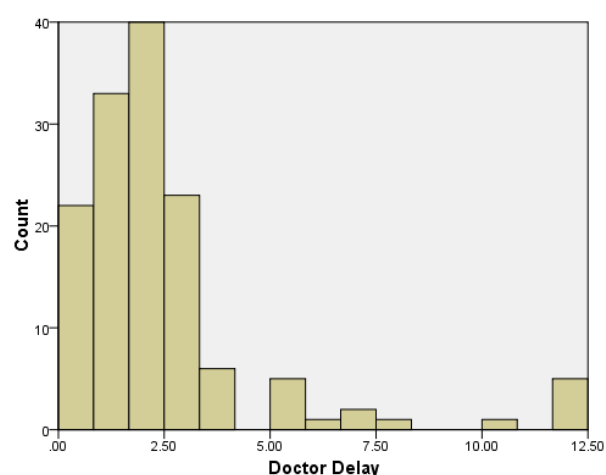


Figure 2: Doctor delay contributing to a delay in diagnosis (months)

No significant association was found between patient delay and age, gender, educational level, marital status and occupation of the patient. None of the presenting symptoms were associated with patient delay. Although 13.2% of the patients had a family history it was not associated with a shorter delay in presentation. There was a significant difference ($p=0.03$) in the late diagnosis of patients who had abdominal pain compared to those who did not have abdominal pain (median 2 vs 1 month). Tumour site and tumour stage at diagnosis were not associated with either delay. The level of impairment of activities of daily living was inversely associated with the diagnostic delay ($p=0.01$) *i.e.*, early diagnosis was seen in patients whose lifestyle was more negatively impacted by the disease.

Discussion

Both patients' delay and doctors' diagnostic delay contribute equally to the cumulative delay in the diagnosis of colorectal carcinoma. The median of both delays was 2 months. Although most of our patients were over the age of 50 years less than one third of them were referred for colonoscopy by the first doctor who was consulted. Patients have been seen by a mean of 3.4 doctors prior to diagnosis. Sri Lanka has a universal health care system that extends free healthcare to all citizens. However, doctors at the first contact care level are not recognising early symptoms of CRC and referring them for colonoscopy. About one fifth of patients have sought treatment initially from non-allopathic (indigenous) practitioners. There appears to be a lack of awareness of early symptoms of CRC among both allopathic and non-allopathic medical practitioners. As expected, early diagnosis was seen in patients whose lifestyle was affected by the disease.

According to a systemic review, the median patient delays in presentation varied between 7 days to 5 months and the median practitioner delay varied between 0 to 15 months (2). In a majority of the studies, patient's age, gender and socio-economic status was not associated with the delay in presentation (2), as in our study. In contrast to our study, a survey of National Health Service (NHS) patients in the UK reported the total delay in diagnosing colorectal carcinoma was significantly associated with marital status and age, where younger people had longer delayed than older people and non-married people had longer delays (4). This difference could be due to the larger sample size and the fact that older and unmarried Sri Lankans rarely live alone and usually have the extended family support.

In our study population, the presence of abdominal pain increased the diagnostic delay. Although this is an uncommon finding, there were a few studies which supported our finding (5, 6). The presence of abdominal pain in our patients may have resulted in more differential diagnoses leading to an increased diagnostic delay. We did not find an association between tumour site and the patient or diagnostic delay, however in some studies, patient with rectal cancers had a more delayed presentation to the hospital than colonic cancers (7, 8).

A limitation of our study was the assessment of patient delay, from the point of time at which the symptoms were noticed. This could mainly depend on symptom perception and symptom recollection of the patient. The time spent awaiting a colonoscopy or a clinic date was not excluded from the diagnostic delay and may have an impact on the result. Most studies on delay in the diagnosis of CRC have been done in European countries and there is a paucity of data from South Asia.

Holliday *et al.*, have shown that patient delay was largely a result of not knowing the importance of bowel symptoms and the diagnostic delay was due to the family doctor not recognising symptoms suggestive of CRC and not examining the patients in detail (10). These findings could explain the diagnostic delays in our patients as well. Having a high index of suspicion among the first contact doctors and early referral would reduce the diagnostic delay. Educating the public about cancer symptoms will reduce the delay in presentation. Such awareness can be brought about using the mass media, social media, the internet and through public awareness programmes.

Conclusions

Our study shows a slight delay in patient and doctors' diagnosis of CRC. As the survival rate of early-diagnosed patients is higher, it is important that first contact doctors and the public are made aware of the symptoms of CRC which would result in earlier referrals for colonoscopy and better patient outcomes.

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