The Time Interval in Patients Care Process of Colorectal Cancer A Hospital based Study in Khon Kaen, Thailand

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Abstract

Background: Colorectal cancer (CRC) is the fifth common cancer in Thailand. Waiting time is a problem within the cancer management and may lead to poor results of cancer. This study aimed to explore the time interval during the process of CRC management.

Objective: To determine the time interval throughout the patients care process of CRC in a hospital in Khon Kaen, Thailand.

Methods: A cross-sectional descriptive study of 191 CRC participants who undergoing treatment and CRC confirmed with pathology examination in the tertiary hospital in Khon Kean Province. Data were collected by structured interview and medical record. The time interval in each process of CRC reported by median and interquartile interval (IQI).

Results: Median (IQI) of the time interval for diagnosis was 246 days (114-426 days). The longest time interval which accounted among the waiting time process was health system delay 89 days (27-221 days). Some factors differ in the time interval; the tertiary hospital at the first time, female, young patients, and lower-income had longer waiting time.

Conclusions: In conclusion, this study showed that health system delay accounted for most of the time interval for the process of CRC management. For this issue, a shortening time interval for initial investigation was necessary. If the patient delay was to reduce, we needed promotion about knowledge of the first symptom that was related to CRC and rising patients' awareness of cancer.

Keywords: *Time intervals, delay diagnosis, colorectal cancer*

Introduction

Colorectal cancer (CRC) is the most common diagnosed and cause-related to deaths worldwide. New cases over 1.8 million and 880,792 death in 2018.[3] In 2030, the expectation of the new cases of CRC will be a 60% increase to nearly 2.2 million and 1.1 million deaths.[2] In Asia, the trend incidence of CRC will be increasing and accounted for approximately 45% of worldwide.[4]

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In Thailand, CRC is the most common cancer in both sexes. The age-standardized incidence rate (ASR) = 15.2 per 100,000 population in males and ASR = 10.1 per 100,000 population in females.[9] The data form the Khon Kaen population-based cancer registry showed that the ASR=13.1 per 100,000 population in males and the ASR=9.0 per 100,000 population in females.[14]

The time interval in cancer management will be increasing, especially for CRC[21] that reported increasing duration from first visit general practitioner (GP) until diagnosis about 10-25% of the five most common cancers. Furthermore, a longer period in primary care in CRC associated with increasing time to diagnosis.[13]

Delayed diagnosis is important to determine the prognosis of cancer. The shortened delays diagnosis interval related to providing the proportion of early stage of cancer[1] and reducing clinic pathway or fast-track diagnosis and treatment that was allowing patients or pre-cancers to access treatment promptly.[18]

The time interval of the CRC process is crucial, and few studies implicate the waiting time in CRC were done. This study aims to investigate the time interval in patients cares process of CRC: a hospital-based study in Khon Kaen, Thailand.

Materials and Method

Study population

This study uses a cross-sectional descriptive study. The population of this study was the CRC patients who underwent treatment at a super tertiary hospital. The participant defines according to the International Classification of Diseases for Oncology (ICD - O 3rd edition) from C18.0 for Cecum to C20.9 The CRC participants who undergoing treatment and histological confirmed and able to communicate and consented to participants were eligible for inclusion. The patients with metastasis or physiological or psychological problems which affected their ability to answer the question were excluded.

Definition

We defined the time interval as outcome into four sections. (1) Patient delay (PD): the first symptom presentation until first visit their GP; (2) Health system delay (HD): the first consolation with their GP until the diagnosis of CRC; (3) Treatment delay (TD): CRC diagnosed until received first treatment; (4) Time intervals for diagnosis (TID): the first symptom presentation until confirmed diagnosis by histological report (Figure 1).

Data collection

We collected the data form interviewing all participants by structured interview and medical record.

Statistical analysis

Descriptive statistics were analyzed and presented as number and percent for categorical data and mean, SD for continuous data. The results interpreted as median in days and interquartile interval (IQI).

The sample size required minimum of 193 patients was calculated form the formula for multiple linear regr

$$f^2 = \left(\frac{R^2_{t/c}}{1 - R^2_c - R^2_{t/c}}\right)$$

Cohen's determine magnitude of effect size which encloses: 0.02 = small, enclose 0.15 = medium, enclose 0.35 = large. In this study, a certain effect size (f^2) nearly 0.15 was assigned.

$$n = \frac{\lambda(1 - R^2_{Y.A})}{R^2_{T.A}} = \frac{\lambda}{f^2}$$

Results

Demographics of study subjects

A total of 191 CRC patients and incomplete data for two subjects were excluded. Most of subjects were males and mean age was 61.28 (± 10.18) years old. Highest education level was below primary school (32.98%) and bachelor or higher (32.46%). Also, majority of health insurance was the civil servant medical benefit scheme (CSBMS) (Table 1).

The time interval throughout the patients care process of CRC

The result showed that the median (IQI) of TID, PD, HD and TD was 246 days (114-426 days), 61 days (16-184 days), 89 days (27-221 days) and 18 days (0-41 days), respectively.

The median (IQI) of HD seems to longest period

when compared with PD and TD.

Discussion and Conclusion

The time interval for diagnosis (TID)

The median (IQI) of TID was 246 days (114-426 days). It was nearby the median SDI was found at 102-217 days.[7-8,19] As the results from the Denmark showed that the median (IQI) of total delay was 109 days (65-194 days).[12] Even though, the time interval in this study seems to be longer than the previous studies, which were developed countries.

Patients delay (PD)

The median (IQI) of PD was 61 days (16-184 days). The previous studies reported the median (IQI) of PD which was 28-150 days[7,12] and the mean was 106 days[15] and 37% rectal cancer patients were delayed >3 months.[10] 486 (60.6%) people who spent the time to see medical for a week. The average duration to see CRC medical was 1.9 (±2.31) weeks.[16]

Health system delay (HD)

The median (IQI) of HD was 89 days (27-221 days), when compared with other countries, a median (IQI) was 67 (28–132).[22] Two other studies reported the median of HD was 17 (8-39) weeks and 40 (23–71) days.[17,23] Length time in HD of our finding was quite long when compared with other studies.

Treatment delay (TD)

The median (IQI) of TD was 18 days (0-41 days). Other studies reported the median was 22-37 days, median (range) was 7 (1–361) days and the mean (SD) was 15.9 (27.6) days.[7-8,20] In breast cancer,

Table 1. Baseline characteristics

Variable	Number (n = 191)	Percentage
Gender		
Male	118	61.78
Female	73	38.22
Age (years)		
<40	7	3.66
40-49	16	8.38
50-59	47	24.61
>=60	121	63.35
Mean (SD)	61.28 (± 10.18)	
Median (Min:Max)	62 (24 : 89)	
Education level		
Below primary school	63	32.98
Primary school	23	12.04
Highschool/Diploma/equivalent	43	22.51
Bachelor or higher	62	32.46
History of cancer in family members		
Yes	81	42.41
No	110	57.59
Frist health care visit		
Primary health care	5	2.62

Cont... **Table 1. Baseline characteristics**

Secondary Hospital	73	38.22
Tertiary Hospital	49	25.65
Private Hospital	64	33.51
Insurance		
Nothing/Self-pay	11	5.76
CSBM[S]*	116	60.73
SSS†	3	1.57
UCS‡	55	28.80
Other	6	3.14
Stage of CRC (n = 175)		
Stage I	14	8.00
Stage II	52	29.71
Stage III	53	30.29
Stage IV	36	20.57
Unknown	20	11.43

*The Civil Servant Medical Benefit Scheme (CSBMS)

†The Social Security System (SSS)

‡The Universal Coverage Scheme (UCS)

lung cancer, colorectal cancer and upper GI cancer were 8-15 days, 10-25 days, 6-14 days, and 7-13 days, respectively.[6] The period time in TD of our finding seem to the other studies.

The reasons that can explain, we conducted in a university hospital that could affect the results because most of the patients who come to service were CSBMS. These patients had more opportunity to access to health services than other groups. Measurement of the date of first symptom presentation was less precise. PD was reflecting in which the patients had different in symptom awareness or health-seeking behavior.[2]

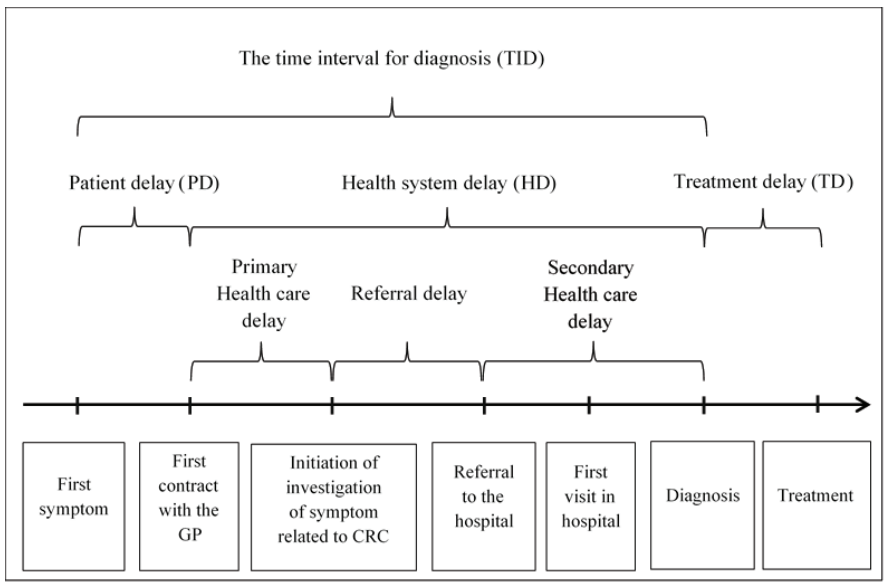

Figure 1. The time intervals in the patients care process

The problem solving was asking the reference date that was a major Thai holiday/event or season. This method can help the patients to remind the date of the event. There were differences in health systems. In many developed countries, there were fast-track and more alternatives to access services in a variety of health facilities. For example, they can visit to specialist without waiting to referral by GP. In Sweden, the patients usually pay the same whether you choose a private or public clinic or hospital.[11] The results from our study showed that the patients who visited private hospitals most likely had shorter waiting times for diagnosis than government hospitals.

The strength of this study, the investigators had interviewed all participants and medical record was used to determine the accuracy of data and prevented recall bias. Moreover, we had more information by interviewing the patients.

In conclusion, improving the initial investigation was necessary for HD. We needed promotion about knowledge of the first symptom that was related to CRC and rising patients' awareness of cancer. The future research in large populations and factors associated with time intervals would better explain the burden.

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