

RESEARCH COMMUNICATION

Trends in Incidences of Stomach and Colorectal Cancer in Khon Kaen, Thailand 1985-2004

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Abstract

Background: The life styles of Thai people are changing with westernization and this would be expected to have an impact on the prevalence of cancer and other non-communicable diseases. For planning control programmes it is necessary to monitor change over time and the present study was conducted to provide information on stomach and colorectal cancer incidence rates in Khon Kaen Cancer Registry (KKCR), established in 1984 at the Faculty of Medicine, Srinagarind Hospital, Khon Kaen University. **Objective:** To assess trends in urban and rural areas of Khon Kaen province during 1985 - 2004. **Methods:** Data for stomach and colorectal cancer with an ICD-O diagnosis (coding C16 , C18 – C20) from the population-based cases of the KKCR, registered between 1985 and 2004, were retrieved and incidence trends were calculated using the Generalized Linear Model method (GLM), which generates incidence-rate-based logarithms. **Results:** The study population comprised 2,530 cases, 721 of stomach (males 449, females 272) and 1809 of colorectal (males 976, females 833) cancer. Most cases were aged 35-75 years. According to the histopathological diagnosis, the most common was adenocarcinoma with over 90 percent. The overall age-standardized incidence rates (ASR) for stomach cancer were 4.5 and 1.4 per 100 000 in males and females, respectively, during 1985-1989, 3.7 and 2.0 during 1990-1994, 3.0 and 2.2 during 1995-1999 and 3.6 and 1.8 during 2000-2004 . The respective figures for colorectal cancer were 3.3 and 2.6, 4.6 and 3.1, 5.4 and 3.5 and finally 5.8 and 5.3. In both urban and rural areas males were affected more frequently than females, although a shift was evident towards decrease in the se ratio was evident for colorectal cancers over time. **Discussion:** The results of this study showed slight increase in the incidence of colorectal cancer in Khon Kaen province, while rates for stomach cancer remained quite stable. The findings indicate a need for continuing research in stomach and colorectal cancer epidemiology, with subdivision into particular sites within these two sections of the gut.

Key Words: Stomach and colorectal - incidence - trends - cancer registry

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Introduction

Stomach and colorectal cancers are among the most common cancers in the world, with Japan currently having highest incidence rates for the colorectum worldwide and a continuing major problem with gastric cancer (Parkin et al., 2002). In Thailand, stomach and colorectal cancers are more common cancer in males more than females, the overall ratio for stomach cancers varying from 1.5 to 1.7 in Chiang Mai, Khon Kaen and Songkhla. The estimated age-standardized incidence rate was 4.9 per 100,000 for males and 3.0 per 100 000 for females. Chiang Mai had the highest incidence were 7.9 per 100 000 and 5.2 per 100,000 both males and

females followed by Lampang ASR 7.5 and 4.6 per 100 000 in males and females. The lowest rates are in Songkhla ASR 2.0 and 1.4 per 100 000 in males and females respectively (Sriplung et al., 2003). The incidence rates for colorectal cancers in both sexes in Bangkok are higher than in the other regions in Thailand (Sriplung et al.,2005; Sriplung et al 2006). This reflects differences in life styles of Thai people within the different regions and variation in the rate of change to a western style diet, with higher fat, animal protein, low fiber and high levels of saturated fat (Ratnali et al, 2005 ; Sriamporn et al.,2005).

Information on trends regarding prevalence of disease are clearly necessary for control planning. Since the Khon

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Kaen Cancer Registry was established in 1984 at the Faculty of Medicine and Srinagarind Hospital, Khon Kaen University its population-based registration data are a valuable resource for following time trends. Therefore the present study was performed with the focus on stomach and colorectal cancers in Khon Kaen province.

Materials and Methods

Case definitions

All stomach and colorectal cancers registered between January 1st, 1985 to December 31, 2004 with an ICD-O diagnosis (coding C160-169 and C180-209) were selected (Fritz et al., 2000).

Sources of data

The population-based cancer registry at the Faculty of Medicine, Srinagarind hospital, Khon Kaen University, started in January 1988. The data on cancer patients are collected by both passive and active methods from one university hospital (Srinagarind hospital), 1 regional hospital (Khon Kaen Central hospital), 1 military hospital (Sripacharin), 8 private and 20 community hospitals, 2 health promotion centers (regions 4 and 6), the Provincial Chief Medical officer's Office and Civil Registration Section of all districts.

The data for those who are registered as Khon Kaen residents are extracted from the population-based Khon Kaen provincial cancer registry of Srinagarind hospital. The medical charts of patients diagnosed as having cancer are reviewed and registered from other hospital medical records by the Khon Kaen cancer unit staff. Death certificates are collected from the Provincial Chief Medical officer's Office and Civil Registration Section of all districts. The registry staff team visits these sources to notify and recheck with health personnel in that area. All the data are verified, checked for duplication coded and entered into the CANREGT soft ware.

For this study Khon Kaen province (Figure 1), districts were categorized into two groups - urban and rural. Our analysis included stomach and colorectal cancer cases

diagnosed during the period 1985-2004. Incidence rates were calculated for both cancer types. Due to small numbers the rates for individual years were grouped into four categories; 1985-1989, 1990-1994, 1995-1999, 2000-2004 (see Table 1)

Statistical methods

Percentages was used to describe proportions regarding sex, age at diagnosis, basis of diagnosis, type of disease and means ± SDs for age at diagnosis. ASRs for five-year age groups in the periods 1985-1989, 1990-1994, 1995-1999, 2000-2004 and 95 % confidence intervals (Jensen et al., 1991) were calculated for both urban and rural areas. The generalized linear model (GLM) method was applied for analysis based on annual incidence rates, corresponding p-values and 95 % confidence intervals.

Results

Stomach cancer

The study population comprised 721 (males 449, females 272) cases of stomach cancer (Table 2). The median age at diagnosis of was 60 years for males and 58 years for females. Males were affected two times more frequently than females. Adenocarcinomas accounted for 92.8 percent. The overall age-standardized incidence rates (ASR) were 4.5 and 1.4 per 100 000 for males and females during 1985-1989, 3.7 and 2.0 in 1990-1994, 3.0 and 2.2 in 1995-1999 and 3.6 and 1.8 in 2000-2004. For urban and rural areas the overall

Table 1. Number of Cases of Stomach and Colorectal Cancer in Khon Kaen, between 1985 and 2004

Period	Stomach		Colorectal	
	Male No. (%)	Female No. (%)	Male No. (%)	Female No. (%)
1985-1989	108 (24.1)	42 (15.4)	127 (13.0)	111 (13.3)
1990-1994	106 (23.6)	66 (24.3)	206 (21.1)	161 (19.4)
1995-1999	100 (22.3)	81 (29.8)	271 (27.8)	209 (25.1)
2000-2004	135 (30.1)	83 (30.5)	372 (38.1)	352 (42.3)
Total	449 (100)	272 (100)	976 (100)	833 (100)

Table 2. Demographic and Clinical Characteristics

Characteristics	Stomach		Colorectal	
	No.	%	No.	%
1. Sex				
-Males	449	62.3	976	53.9
-Females	272	37.7	833	46.1
2. Age(year)				
< 30	21	2.9	49	2.7
30-39	61	8.5	129	7.1
40-49	104	14.4	295	16.3
50-59	185	25.7	429	23.7
≥60	350	48.5	907	50.1
Mean:SD	57	13.8	58	14.0
3. Basis of diagnosis				
- Death Certificate Only	26	3.6	29	1.6
- Histology proven	447	62.0	1074	59.4
- Others	248	34.4	706	39.0
Total	721	100	1809	100



Figure 1. Districts of Khon Kaen Province

age-standardized incidence rates were 2.01 and 0.68, and 2.45 and 0.75 per 100 000 in males and females in 1985-1989, 1.53 and 0.87, and 2.18 and 1.13 in 1990-1994, 1.03 and 1.15, and 1.92 and 1.01 in 1995-1999, and 1.30 and 0.62, and 2.29 and 1.22 in 2000-2004. The time trend analysis found that male stomach cancers decreased in urban and rural areas (3.7 %, P-value 0.01, 1 %, P-value 0.4), whereas in females rates tended to rise (urban 0.2 %, P-value 0.8,

rural 2 %, P-value 0.14) (Figures 2 and 3).

Colorectal cancer

The study population comprised 1809 (males 976, females 833) colorectal cancer cancers (Table 2). Adenocarcinomas accounted for 97.6 percent. The overall age-standardized incidence rates (ASR) were 3.3 and 2.6 per 100 000 for males and females during 1985-1989, 4.6 and 3.1 in 1990-1994, 5.4 and 3.5 in 1995-1999 and 5.8 and 5.3 in 2000-2004. For urban and rural areas the overall age-standardized incidence rates were 2.06 and 1.91, and 3.25 and 1.92 per 100 000 in males and females in 1985-1989, 3.56 and 1.96, and 3.60 and 2.93 in 1990-1994, 3.18 and 2.61, and 4.99 and 2.91 in 1995-1999, and 4.45 and 3.99, and 5.42 and 4.10 in 2000-2004.

Over the period 1985-2004 as whole there was a rise in rates for both sexes. Significance was achieved for males in urban and rural areas (4.6 %, P-value <0.001 and 3.2 %, P-value =0.001) and females (5.7 %, P-value <0.001 and 4.6%, P-value <0.001) (Figures 4 and 5).

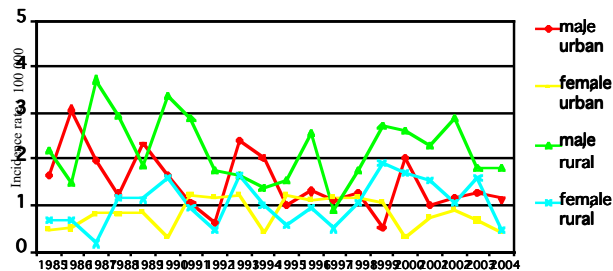


Figure 2. Trends in Incidence of Stomach Cancer in Khon Kaen, Thailand 1985-2004

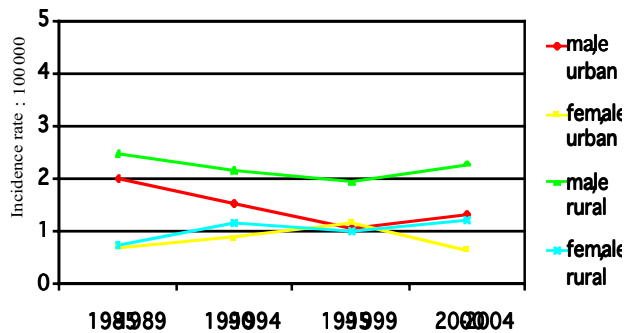


Figure 3. Trends in Incidence of Stomach Cancer in Khon Kaen, Thailand 1985-2004, by Period of Time

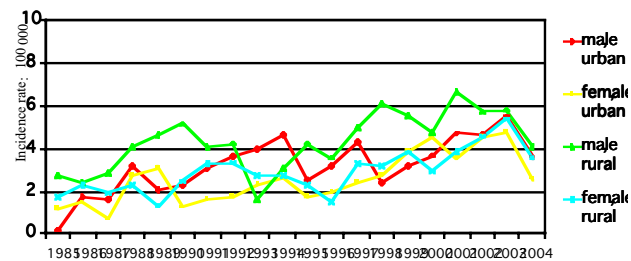


Figure 4. Trends in incidence of colorectal cancer in Khon Kaen, Thailand 1985-2004

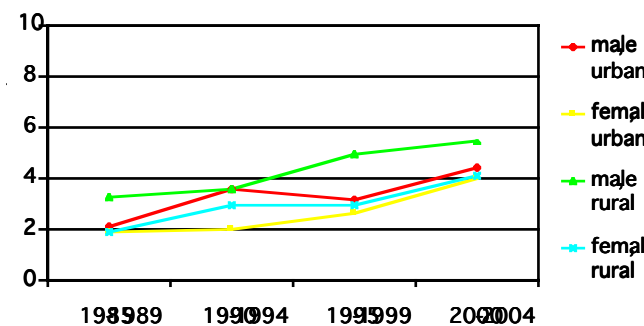


Figure 5. Trends in Incidence of Colorectal Cancer in Khon Kaen, Thailand 1985-2004, by Period of Time

Discussion

According to total findings for stomach and colorectal cancer, our data showed statistically significant increasing trends in the incidence of colorectal cancer in Khon Kaen between 1985 and 2004 in both sexes. In line with expectation the rates for males were higher than in females (Parkin et al.,1998; Thong-Ngam et al., 2001; Boyle et al., 2002; Ngoan and Yoshimura, 2002). The analyses were limited to some extent because of the substantial proportion where diagnosis was not histologically proven. Clearly cancer registries need to have high quality data for completeness and accuracy (Teppo et al., 1994).

The lack of change in stomach cancer in our data contrast with the marked decrease found in other countries of Asia (Ngoan and Yoshimura, 2002), but this might be a reflection of the relatively low rates found in Thailand. Whether there might have been a shift in the subsite, different risk factors being known to operate in the cardia and antrum within the stomach (Inoue et al., 2002; Sasazuki et al., 2002), remains to be established.

Regarding colorectal cancer, a marked increase has been noted in many countries of Asia, and particularly in Japan, where links have been drawn to shifts in the diet (Kono, 2004) and increase in diabetes (Kuriki et al., 2004). Presumably this is also playing a role in Thailand, and this might explain variation within the country, colorectal cancer rising much faster in Bangkok than in the provinces (Sriplung et al., 2006). One factor which needs to be taken into account in future analyses of this type is change in subsite distribution within the colorectum, a decreasing proportion of rectal cancers being observed for example in Japan (Takada et al., 2002). There is also considerable evidence for differences in risk factors within the colon itself, proximal lesions showing the greatest link with a western diet (Moore et al., 2005).

In summary, we found that a significant change in the incidence of colorectal but not stomach cancer between 1985 and 2004 in Khon Kaen. Better application of the new diagnosis tools which have become available and more efficient utilization of the National Cancer Institute registry data for monitoring cancer management are now necessary as part of a coordinated program for cancer prevention and early detection.

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