·Clinical Research·

Incidence of colorectal cancer in Guangzhou City from 2000 to 2002

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[Abstract] **Background and Objective:** The incidence of colorectal cancer is increasing with the change of the diet habit. This study was to analyze the incidence of colorectal cancer in Guangzhou City, thus to provide references and information for the prevention and treatment of this disease. **Methods:** Data of colorectal cancer patients during 2000–2002 were collected from Guangzhou population-based cancer registry. Incidence and mortality of colorectal cancer were calculated and analyzed. **Results:** The crude incidence and mortality of colon cancer in Guangzhou from 2000 to 2002 were 13.4 per 100000 (13.5 per 100000 in males, 13.3 per 100000 in females) and 7.1 per 100000 (7.3 per 100000 in males, 6.9 per 100000 in females), respectively. The crude incidence and mortality of rectal cancer in Guangzhou from 2000 to 2002 were 9.6 per 100000 (10.8 per 100000 in males, 8.2 per 100000 in females) and 5.0 per 100000 (5.5 per 100000 in males, 4.5 per 100000 in females), respectively. The incidence of colon cancer and rectal cancer ranked the fifth and seventh respectively among all cancers. The incidence of colorectal cancer was increased with age. **Conclusions:** The incidence rate of colorectal cancer is high in Guangzhou. Studies on prevention and treatment of colorectal cancer should be enhanced.

Key words: colorectal cancer/epidemiology, incidence, mortality, cancer registration, Guangzhou, China

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The incidence of colorectal cancer is correlated with dietary habits; diets of high animal protein, high fat and low fiber are all risk factors for colorectal cancer.[1] As the dietary habits change, the incidence of colorectal cancer increases. The colorectal cancer has already posed a severe threat to public health as one of the most common malignant tumors.[2,3] The standardized incidence rate of colorectal cancer in Shanghai from 1998 to 2002 was, respectively, 15.3 per 100,000 in males and 14.9 per 100,000 in females. This morbidity level paralleled to that in developed countries.[4] In order to find features of occurrence and provide scientific basis for prevention and treatment of colorectal cancer, we conducted a survey into the incidence and mortality of colorectal cancer for the period from 2000 to 2002.

Materials and Methods

Case sources. Data on registrations of colorectal cancer for the years 2000-2002 were obtains from the Guangzhou Cancer

Registry, which has the materials of incidence and mortality of various tumors. These materials were collected according to the Guideline for Chinese Cancer Registration.[5] Within three years, a total of 2484 new cases of colorectal cancer were recorded and verified, of which 1450 were colon cancer and 1034 were rectal cancer. In total 1313 mortality cases were identified, of which 769 were colon cancer and 544 were rectal cancer. The information of population composition with an interval of five years in Guangzhou was obtained from the Information Center of Guangzhou Municipal Public Security Bureau.

Statistical analysis. According to the Guideline for Chinese Cancer Registration [5] and in reference to requirements for cancer registration in the Cancer Incidence in Five Continents IX published by the International Agency for Research on Cancer (IARC), the original registration data in 2000-2002 were reviewed and sorted regarding accuracy, completeness and reliability with the MS-FoxPro and IARCcrg Tools (http://www.iacr.com.fr/iarccrgtools, htm) [7] from IARC&IACR. The proportion of cases diagnosed with pathological test, the proportion of cases with death certificate notification (DCN), and the ratio of mortality to incidence for colon cancer were respectively 80.2%, 2.6% and 0.53, while they were respectively 78.8%, 2.8% and 0.53 for rectal cancer. The incidence and mortality data were coded and classified in reference to International Classification of Disease version10 (ICD-10). The Chinese age standardized ratio was calculated with the Chinese standard population composition in 1982, whereas the world age standardized ratio was from the world standard population composition in 1960.

Results

Incidence of colorectal cancer. Over the three-year period 2000-2002, a total of 1450 new cases of colon cancer were identified in Guangzhou, of which 753 were males and the other 697 were females with a sex ratio of 1.08:1. In the same period, a total of 1034 cases of rectal cancer were observed, of which 604 were males and 430 were females with a sex ratio of 1.40:1. Information of incidence of colorectal cancer was detailed in Table 1.

The median age for occurrence of colon cancer in Guangzhou was 66 years old, and 65 for rectal cancer. The incidence rates of both colon cancer and rectal cancer reached the average occurrence level in the age group from 40 to 44 years old. They gradually got to the peak in the age group from 80 to 84 years old. The difference in incidence rates between males and females increased as the age rose regarding different age groups (Fig. 1 and Fig. 2)

Mortality for colorectal cancer. In Guangzhou, 769 mortality cases of colon cancer were found from 2000 to 2002, of which 409 were males and the other 360 were females with a sex ratio of 1.14:1. In the same period, a total of 544 cases of rectal cancer were observed, of which 310 were males and 234 were females with a sex ratio of 1.32:1. Information of mortality of colorectal cancer was detailed in Table 2.

Table 1 The incidence of colorectal cancer in Guangzhou city from 2000 to 2002

Site	Sex	Ratio[a](%)	Crude rate($1/10^5$)	ASRCN[b]($1/10^5$)	ASRWLD[c]($1/10^5$)	Cumulative rate (%)	
						0–64 years	0–74 years
Colon	Male	5.2	13.5	10.1	14.0	0.6	1.7
	Female	6.8	3.3	8.2	0.9	0.6	1.4
	Total	5.9	13.4	9.0	12.1	0.6	1.5
Rectum	Male	4.2	10.8	8.1	11.0	0.5	1.3
	Female	4.2	8.2	5.2	6.8	0.4	0.8
	Total	4.2	9.6	6.4	8.6	0.4	1.1

[a]Ratio: colon cancer or rectal cancer/ all cancers

[b]ASRCN: China age-standardized incidence rate.

[c]ASRWLD: World age-standardized incidence rate

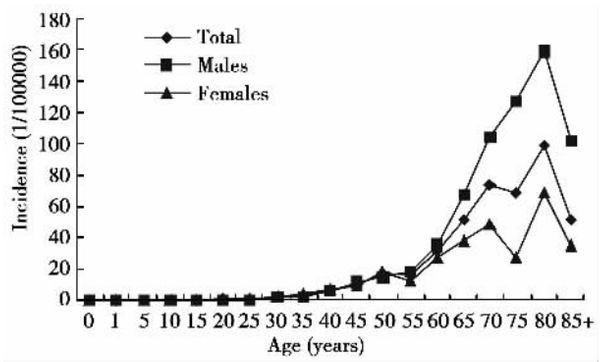

Figure 2 The incidences of rectal cancer of different age groups in Guangzhou from 2000 to 2002

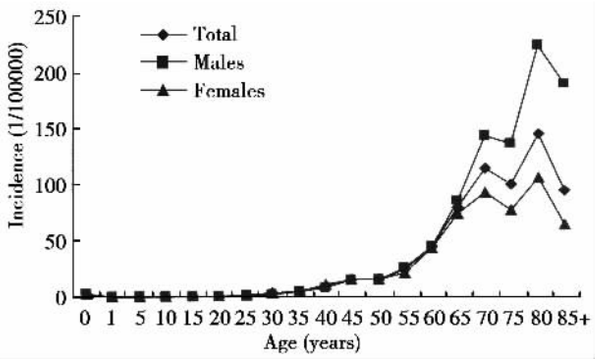

Figure 1 The incidences of colon cancer of different age groups in Guangzhou from 2000 to 2002

Table 2 The mortality of colorectal cancer in Guangzhou city from 2000 to 2002 Cumulative rate(%)

Site	Sex	Ratio(%)	Crude rate[a](1/10^5)	ASRCN[b](1/10^5)	ASRWLDc(1/10^5)	Cumulative rate (%)	
						0–64 years	0–74 years
Colon	Male	4.0	7.3	5.5	7.8	0.2	0.8
	Female	6.3	6.9	3.9	5.5	0.2	0.7
	Total	4.8	7.1	4.5	6.3	0.2	0.7
Rectum	Male	3.0	5.5	4.1	5.9	0.2	0.6
	Female	4.1	4.5	2.6	3.5	0.2	0.4
	Total	3.4	5.0	3.2	4.5	0.2	0.5

[a]Ratio: colon cancer or rectal cancer/ all cancers

[b]ASRCN: China age-standardized incidence rate.

[c]ASRWLD: World age-standardized incidence rate

The mortality rates of colon cancer and rectal cancer reached the average level, respectively, in the age group from 55 to 59 years old and in the age group from 45 to 49 years old. With gradual increase, they both arrived at the peak in the 84 years old age group. The difference in mortality rates increased as the age rose regarding different age groups (Fig. 3 and Fig. 4)

Ratio of mortality to incidence. The ratio of mortality to incidence (M/I) of colon cancer was 0.53, with 0.54 for males and 0.52 for females, while the ratio of mortality to incidence (M/I) of rectal cancer was 0.53, with 0.51 for males and 0.54 for females.

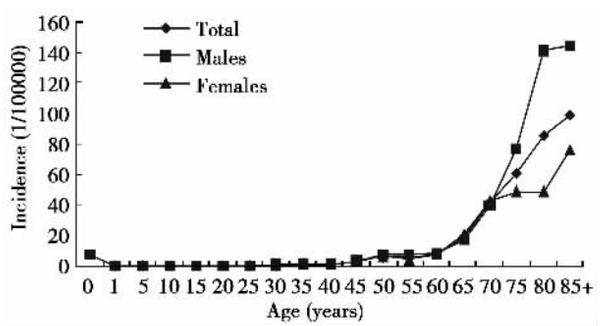

Figure 3 The mortality of colon cancer of different age groups in Guangzhou from 2000 to 2002

Discussion

The incidence rate of colon cancer in the developed countries is high, with a standardized incidence rate from 18 to 30 per 100,000 men and from 16 to 26 per 100,000 women. [8] The incidence rate of colorectal cancer of Shanghai is the highest in China, which was 15.3 per 100,000 men and 14.9 per 100,000 women, both reached the level of the developed countries. From the materials provided by the Guangzhou Cancer Registry in 2000-2002, the current survey found the incidence rates of colorectal cancer were respectively 14.0 per 100,000 men and 10.9 per 100,000 women. Among the cities with cancer registration in China, second only to

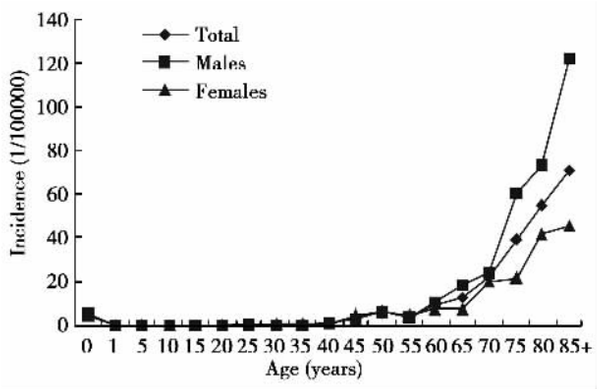

Figure 4 The mortality of rectal cancer of different age groups in Guangzhou from 2000 to 2002

Shanghai, the standardized incidence rate of Guangzhou was apparently higher than that for any of Beijing, Tianjin, Hangzhou and Wuhan. It is hypothesized that the incidence rate of colon cancer is significantly high and its prevention and treatment are worth further research.

The incidence of colon cancer is correlated with dietary habits; diets of high animal protein, high fat and low fiber are all risk factors for colon cancer. In America, the incidence of colon cancer has increased since 1975 and reached the peak in 1989. Due to large-scale anti-cancer publicity and call for healthy diet, the incidence rate has decreased gradually.[9] As a developing country, the incidence of CRC has gradually increased in China with the dietary habits changed. Shanghai City initiated cancer registry as the earliest city in China. In 1973, the crude incidence rates for colon cancer in males and females were respectively 5.4 per 100,000 (5.6 per 100,000 for standardized incidence rate in China) and 5.6 per 100,000 (5.0 per 100,000 for standardized incidence rate in China). They respectively increased to 22.9 per 100,000 (15.3 per 100,000 for standardized incidence rate in China) and 26.0 per 100,000 (14.9 per 100,000 for standardized incidence rate in China). The incidence rates for males and females increased by 324.1% and by 364.3% , respectively.[10] Guangzhou started cancer registry in 1999 and no historical materials were possible for comparison primarily. As the incidence of colorectal cancer in Guangzhou nearly reached the level in Shanghai, it might have increased gradually in the last 20 years.

The incidence rates of colon cancer in big cities are apparently higher than that in the rural areas. Among Shanghai, Beijing, Tianjin, Hangzhou and Wuhan, the incidence rates were between 7.0 per 100,000 and 14.4 per 100,000, while they were among 0.4 per 100,000 and 3.9 per 100,000 in Cixian County, She Xian County, Sihui County, Huaian County, Zhuzhou County, Yanting County, Wuwei County and Fusui City.[4] In Shanghai, the incidence rate in the urban area was evidently higher than that in the suburban area.[2] The obvious difference in incidence rates of colon cancer further demonstrate dietary habits are closely correlated with colon cancer.

Rectal cancer is also one of the most common malignant tumors. In Shanghai, the standardized incidence rates for males and females were, respectively, 11.2 per 100,000 and 8.3 per 100,000 from 1998 to 2002,[4] while they were 11.0 per 100,000 and 6.8 per 100,000 in Guangzhou. The overall incidence rate in Guangzhou in this period was 8.6 per 100,000, accounting for 4.2% of all malignant tumors and ranked as the seventh. The incidence of rectal cancer nearly reached the level in Shanghai, so efforts on prevention and treatment for rectal cancer should also be made as well.

In the last 30 years, the incidence of colon cancer has increased apparently in China, whereas incidence of rectal caner has not increased significantly. In 1973 and 2000, the standardized incidence rates of colon cancer for males and females were 5.6 per 100,000 and 5.0 per 100,000, and 15.3 per 100,000 and 9.9 per 100,000 respectively, while the standardized incidence rates for rectal cancer were 9.4 per 100,000 and 6.4 per 100,000, 10.9 per 100,000 and 8.1 per 100,000 respectively.[10] The registry materials in Tianjin and Wuhan also showed similar findings.[4,11-13] Whether rectal cancer shows less closed correlation with dietary habits than colon caner, or whether they have different risk factors is still under further research.

In conclusion, the findings in our survey find that the incidence rate of colorectal cancer is high in Guangzhou and that the incidence of colon

cancer is higher than that of rectal cancer. Further studies on prevention and treatment for colorectal cancer are still requiring more improvements.

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