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## Clinical characteristics of colorectal cancer in South Kazakhstan region

The article provides general statistics, figures on incidence, mortality, 5-year survival, stages and dynamics for 5 years for colorectal cancer in South-Kazakhstan region. The analysed retrospective results include 261 cases of colorectal cancer registered in South Kazakhstan Regional Oncology Dispensary in 2012-2015. The sample was analysed for ethnicity, age, gender, tumour location, and disease stage. The results showed the general growth in the incidence: the number of newly detected patients with colorectal cancer has increased from 63 in 2012 to 93 cases in 2015, with the related increase in the annual and total mortality. The author considers possible reasons for the detected associations.

**Keywords:** colorectal cancer, disease stage, mortality, retrospective analysis, survival rate.

**Topicality.** International Malignant Tumours Research Agency predicts that the general cancer incidence in the world is growing daily and will increase 1.5 times by 2020, mainly due to lung cancer, rectal cancer and colorectal cancer (CRC) [1].

According to the data of the Kazakh Institute of Oncology and Radiology, CRC ranked 5th in the Republic in 2010 (more than 2.5 thousand new cases per annum) [2] and advanced to the 3rd place in 2014 (3086 registered cases) [3].

CRC incidence is statistically growing in our country every year, and the above forecast seems to be true. In spite of the proven direct correlation between the CRC incidence and hereditary factors (family diffuse polyposis, Lynch syndrome) [4], the above mentioned report of the International Agency demonstrates such correlation in 5% of cases only [1].

Further studies have established a linkage between the reasons of CRC and the factors nearly 70% of which could be prevented by nutrition regimen and mode of life [5].

For example, Tsoi et al. note that the number of rectal cancer is 40% more often among smokers in comparison to non-smokers [6].

Cho et al. note that CRC prevails among alcohol abusers [7]. Jacobs et al. also states a high frequency of CRC among overweighted people [8];

Wolin et al. specify that the danger of CRC is 25% lower [9] in people who do physical exercises 3 hours a day.

**Purpose of the study** – retrospective studies among patients treated for CRC in South Kazakhstan region with an expert examination of their ethnicity, gender, age, tumour localization and progression.

**Materials and methods:** Main object of the study were the patients who were registered and received treatment in the South Kazakhstan Regional Oncological Center in 2012-2016. 261 medical histories were studied with the focus on their total number, tumour progression, 1-year and total mortality, 5-year survival rate.

Chi-square method criterion was used as a quality indicator. The critical test value was 5.99 and 7.81, and the emptiness level was 2 and 3, respectively.

The statistical value critical level was 0.05.

The level of correlation was analysed by Cramer criterion V and assessed on the Rea & Parker scale (0.0-0.1 – very poor; 0.1-0.2 – poor; 0.2-0.4 – moderate; 0.4-0.6 – stronger; 0.6-0.8 – strong; 0.8-1.0 – very strong correlation).

The average value (M) and its standard deviation (SD) and median (Me) were calculated for the studied patients.

Correlation coefficient of numerical data was calculated by Spearman rank correlation.

The material distribution criterion was calculated by Kolmogorov-Smirnov (K-S test); the critical data deviation value was 0.05. The confidence interval was assessed by Wald as equal to 95% (95% CI).

Judging by medical histories, the patients were divided into ethnical groups: Kazakh, Slavs, Uzbeks, and others.

By localization of tumours in the intestine: right part of the colon (blind intestine and pars ascendants), cross arm of the colon (from corner of liver to corner of spleen), left part of the colon (pars descendants and colon) and area of rectum (recto-sigmatic part, colon).

**Results.** 261 patients with CRC, 123 men and 138 women, were enrolled in the retrospective study; their average age was 59.97 years (between 23 and 83 years).

**Table 1** – 5-years dynamics of patients treated for CRC.

#	Year	Registered during 1 year	Degree of development						Mortality per annum	Mortality rate	On file in the dispensary	5-years survival	
			I-II	%	III	%	IV	%				Abs.	%
1	2012	63	9	14.2	43	68.2	11	17.4	16	30	298	140	46.9
2	2013	68	31	45.5	27	39.7	10	14.7	15	24	289	119	41.1
3	2014	91	28	30.7	50	54.9	13	14.2	20	42	294	127	43.1
4	2015	112	56	50	30	26.7	26	23.2	22	56	304	134	44
5	2016	93	51	54.8	25	26.8	10	10.7	39	51	356	144	40.4

The table shows annual growth of CRC frequency in South Kazakhstan region. The number of registered patients has grown by more than 30% (63 patients in 2012 vs. 93 in 2016). In 2015, the number was 112, what is 46% higher than in 2012.

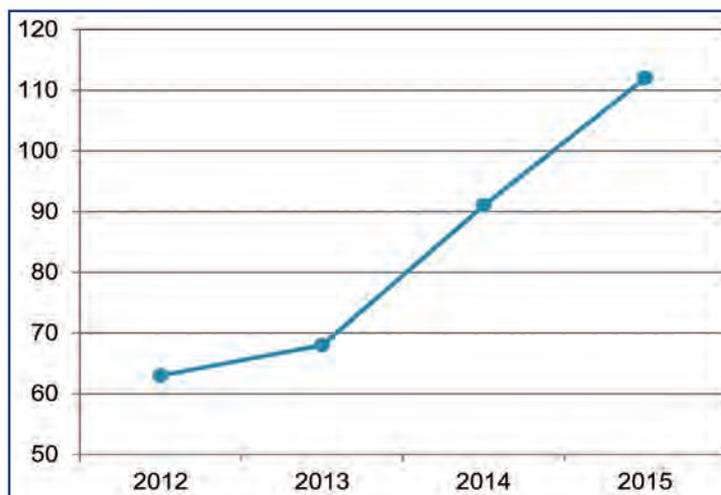


Figure 1 - CRC dynamics

As we see, the number of newly registered patients diagnosed with the initial stage I - II tumour development has grown from 9 in 2012 to 51 in 2016. This is a very good indicator. At the same time, the number of the patients with complications and the stage IV disease has not decreased. In 2012, 11 patients were diagnosed with stage IV cancer vs. 10 in 2016.

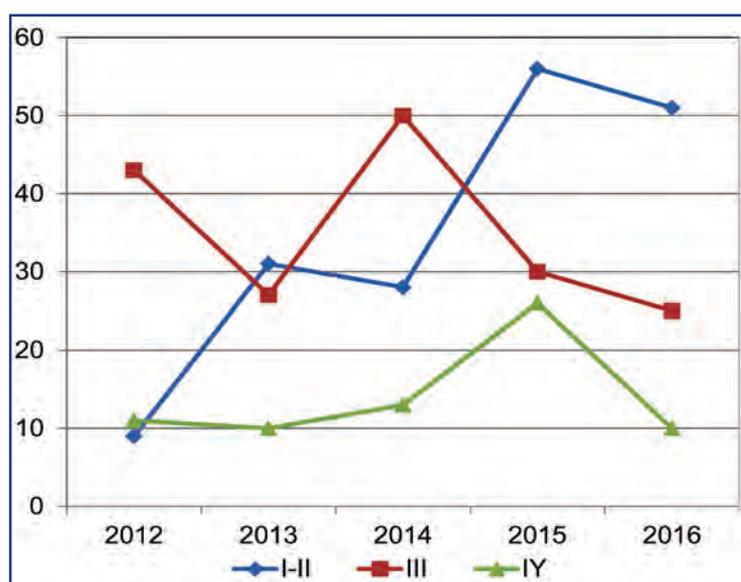


Figure 2 - Stages of CRC development

The mortality rate during the 1st year after diagnosing remains distressing as it grows every year. According to the table, 16 patients have died during 1 year in 2012 vs. 39 in 2016.

The total mortality from CRC has also grown significantly, from 30 in 2012 to 51 in 2016.

The total number of registered CRC patients is growing every year. It has increased by 58, from 298 in 2012 to 356 in 2016.

Table 1 shows the 5-years survival rate of registered patients, with a growth from 140 to 144. The dynamics is insignificant but positive.

Table 2 – Separation by ethnic groups.

	Abs. numbers		%	
	Patients (95% CI)	Expected number	Patients (95% CI)	Expected number
<b>Kazakhs</b>	149 (133.4-164.7)	190	57.1 (51.1-63.1)	72.9
<b>Slavs*</b>	55 (42-67.9)	13	21.1 (16.2-26.1)	4.9
<b>Uzbeks</b>	33 (22.4-43.4)	44	12.6 (8.6-16.6)	16.8
<b>Others</b>	24 (14.9-33.2)	14	9.2 (5.7-12.7)	5.4
<b>Total</b>	<b>261</b>		<b>100%</b>	

$\chi^2_{(3)} = 154,35, p < 0,001, V = 0,44$

\* Russians and Ukrainians

The data shows a higher CRC incidence among Slavic people in terms of the population (55 cases vs. 13 cases,  $\chi^2_{(3)} = 154.35$ ,  $p < 0,001$ ) (Table 1)

**Table 3** – Separation by age.

	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	барлығы
Abs.	0	3	10	30	73	85	54	6	0	261
%	0%	1.2%	3.8%	11.5%	27.9%	32.6%	20.7%	2.3%	0%	100%

As per the table, the average age of patients was 59.97 (standard deviation - 11.66), age median – 61. The gender differences were not so evident.

**Table 4** – Tumour localisation.

	Right part	Horizontal part	Left part	Rectum	Total
abs. (%)	34 (23.3-44.7)	17 (9.2-24.8)	59 (45.8-72.2)	151 (135.4-166.7)	261
%	13%	6.5%	22.6%	57.9%	100%

As per the table, most of the tumours were localized in the rectum (151 out of 261, that is, 58%).

**Table 5** – Disease development stages.

	I	II	III	IV	Total
abs. (% of total)	9 (3.2-14.8)	80 (65.4-94.6)	128 (112.2-143.8)	44 (32.1-55.9)	261
%	3.4%	30.7%	49%	16.9%	100%

The above table illustrates that the advanced tumour stages III-IV were found in more than half of the patients (65.9%), and the initial stage – only in 3.4% cases.

**Results of data analysis:**

- The main reason for advancement of the disease at presentation was the low efficiency of the implemented program of early diagnostics and the negligent attitude of population to the disease.

- The correlation deviations among the studied ethnic groups were significant ( $\chi^2_{(3)} = 154,35$ ,  $p < 0,001$ ,  $V=0,44$ ). Such deviations could be related to the genetic adaptiveness of the patients, their nutrition regimen (the excess of animal fats in the diet) and the regime of seeking for medical help.

- The average age of patients suffering from CRC was 59.97 years. The frequency in men and women did not differ statistically significantly.

- The tumours were most often localized in the rectum (57.9%), and least frequently – in cross-sectional area (6.5%).

- Stage III of development (49%) was most often met at presentation, and stage I was least frequent (3.4%).

Therefore, we consider it is necessary to conduct additional "situation-control" studies among CRC patients.

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