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Risk factors for colorectal cancer in the population of South Kazakhstan

Relevance: *According to the statistics, colorectal cancer (CRC) is in Top 5 of the most common cancers in the Republic of Kazakhstan, and its incidence rate is steadily growing. One of the leading causes of CRC is the so-called "Western" style of nutrition and life, which combines the high-calorie diet and sedentary lifestyle. It was also noted that CRC is getting younger.*

The purpose of this study *was to investigate the risk factors of CRC among the population of South Kazakhstan and the choice of prevention methods.*

Results: *Among the surveyed patients (n=210), the frequent and daily heavy consumption of meat (especially smoked meat) increased the risk of colorectal cancer by 38%, the lack of physical exercise – by 30%, the lack of awareness of the need for preventive examinations – by 41%, the embarrassment when referring to the proctologist (the so-called "false shame") – by 99%.*

The factors reducing the risk of CRC included: rare consumption of meat (-27%), daily consumption of fruits and vegetables (-29%), regular physical exercises (-23%), timely periodic check-ups (-18%), and raising the awareness of their necessity (-29%).

Conclusion: *According to the study findings, frequent and heavy consumption of meat (especially smoked meat) is the main reason for CRC development among the South Kazakhstan population. A sedentary lifestyle also contributes to the development of this disease. Active lifestyle, physical exercises, reduced consumption of meat, and increased consumption of fruits and vegetables, as well as regular preventive check-ups, can serve to prevent the disease.*

Keywords: *colorectal cancer, CRC risk factors, prevention, nutrition, South Kazakhstan.*

Official statistics registers the annual growth of colorectal cancer (CRC) incidence worldwide.

Over the past five years, colon and rectal cancer has entered the list of the most common diseases in the Republic of Kazakhstan. According to the International Agency for Research on Cancer (the IARC), nutritional factors such as the takeover of the Western model of nutrition are among the main reasons for CRC growth. The Western model of nutrition is cheap fast food, which is high in calories, rich in carbohydrates and food additives. Recently, this food culture has become the main diet in both developed and developing countries.

Several important studies conducted around the world to study the causes of CRC has brought different results. For example, 3 hours of physical activity a week reduces the likelihood of CRC by 25%. Also, a daily intake of simple aspirin reduces the likelihood of CRC development by 50%. Daily consumption of calcium reduces the probability of colon cancer by 20%. More than seven servings of meat products per week, as well as alcohol abuse, increase the risk of CRC by more than 50%. There is also evidence that this disease occurs in people who abuse tobacco. These factors of food origin are the main causes of colon and rectum cancer.

The purpose of this study was to determine the level of influence of nutritional factors on the development of colon cancer among the population of the South-Kazakhstan region and the adoption of measures for its prevention.

Materials and Methods: According to the literature studies, food and lifestyle factors are among the main reasons for CRC development. Both of these factors suggest that the occurrence of cancer can be avoided. This scientific research included 210 patients treated at the South Kazakhstan Oncological Dispensary, in 2014-2015. The information for the study was obtained during interviews with treated patients and outpatients. The first part of the questionnaire included questions about age, gender, ethnicity, social status of the patient. The second part covered the nutrition pattern: how often, in what time, what dishes, and in which amount was consumed, as well as the body type of the patient. Then, the questionnaires were analyzed to calculate the relative risk. 95% confidence interval (CI) was calculated using the Wald method.

Results: The study group included in the survey consisted of 91 men and 119 women, all having CRC. The control group included 94 men and 116 women with the diseases of other nosological groups.

The average age was 61-70 years (n=56) in the study group and 41-50 years (n=71) in the control group. It is worth noting that CRC is mostly diagnosed at an elder age.

Comparing the data presented in the table, one can see that the confidence interval does not exceed 95%. However, the rate of cancer development is defi-nitely associated with the patient's lifestyle, nutritional trends, and level of physi-cal activity.

According to statistics, these diseases are more in women than in men. Tumor de-velopment is influenced not by the type and frequency of nutrition, but by its quantity. For example, people who eat three meals a day, get sick less often than those who eat two times or less (0.97% vs. 1.3%). The amount of daily food con-sumed has a great influence on CRC development. For exam-

ple, CRC is 18.6% more frequent in people who overeat than in people with a normalized diet. Also, people who eat a lot of meat products especially smoked meats, get sick 38% more often. Low physical activity is associated with a 30%-higher risk of this pa-thology. These figures are largely compatible with literature data.

Table 1 - Risk factors in the study group and confidence interval indicators

Risk factors		Comparative risks	95% CI
Floor	men	0.91	0.81-1.01
	women	1.09	0.99-1.22
Food consumption frequency	More than 3 times	0.97	0.79-1.83
	3 times	1,04	0.86-1.26
	Less than 3 times	1,03	0.77-1.37
Overeating	often	1,02	0.99-1.47
	seldom	0.83	0.68-1.01
Consumption of alcohol	Does not drink	1,02	0.84-1.24
	sometimes	1.28	1.05-1.55
	Once a week	0.62	0.38-1.0
	everyday	0.68	0.42-1.1
Consumption of fatty foods	Seldom	0.91	0.76-1.11
	A lot every day	1.09	0.9-1.32
Consumption of meat products	Seldom	0.73	0.56-0.94
	A lot every day	1.38	1.07-1.78
Types of meat products	Boiled	0.92	0.74-1.014
	Fried	0.95	0.56-1.6
	Smoked	1.39	1.01-1.9
Consumption of vegetables	Seldom	1.36	1.13-1.65
	Often	1,07	0.87-1.61
	Everyday	0.71	0.54-0.91
Physical activity	Always	0.77	0.6-0.99
	No	1.3	1.01-1.7
Shame on visiting a proctologist	Yes	1.99	1.57-2.53
	No	0.5	0.4-0.64
Passing periodic health examinations	Always	0.82	0.67-1.0
	No	1.21	1.0-1.5
Awareness of the need for periodic health examina-tions	Yes	0.71	0.59-086
	No	1.41	1.17-1.7

Factors that increase the risk of cancer include fear of screening (false bashfulness). For such patients, the risk is 99%, and for those who are not aware of the need for periodic health examinations, the risk is 41%. Factors impeding the development of CRC include a moderate diet, rare consumption of meat (-27%), frequent consumption of vegetables, and regular physical activity (23%). Those who undergo periodic health examinations in time have an 18% and 29% probability of colon and rectal cancer.

Conclusion: Summing up the study results, it should be noted that the CRC incidence in South Kazakhstan depends on several factors, namely, nutrition and physical activity. Having examined the obtained data, we found that excessive eating, including excessive consumption of meat products, smoked meat, as well as limited physical activity, influence the development of this pathology. To prevent CRC development, one needs to consume large amounts of vegetables, normalize the eating behavior, practice regular exercises and undergo periodic professional examinations.

References

1. Kamkhen V.B., Turbekova M.N. Preobladayushchiye lokalizatsii v strukture zabolevaniy zlokachestvennymi novoobrazovaniyami v Kazakhstane (The prevailing localization of malignant neoplastic disease in Kazakhstan) // Meditsina (Medicine). – 2015. – 6 (156). – P. 25-27 [in Russian];

2. World Health Organization. Global cancer rates could increase by 50% to 15 million by 2020 // www.who.int/mediacentre/news/releases/2003/pr27/en/;

3. Wolin K.Y., Yan Y., Colditz G.A., Lee I.M. Physical activity and colon cancer prevention: a meta-analysis // Br J Cancer. – 2009. – Vol. 100(4). – P. 611–616;

4. Flossmann E., Rothwell P.M. Effect of aspirin on long-term risk of colorectal cancer: consistent evidence from randomized and observational studies // Lancet. – 2007. – Vol. 369(9573). – P. 1603–1613;

5. Rothwell P.M., Wilson M., Elwin C.E. et al. Long-term effect of aspirin on colorectal cancer incidence and mortality: 20-year follow-up of five randomized trials // Lancet. – 2010. – Vol. 376(9754). – P. 1741–1750;

6. Cho E., Smith-Warner S.A., Spiegelman D. et al. Dairy foods, calcium, and colorectal cancer: a pooled analysis of 10 cohort studies // J Natl Cancer Inst. –2004. – Vol. 96(13). – P. 1015–1022;

7. Grodstein F., Newcomb P.A., Stampfer M.J. Postmenopausal hormone therapy and the risk of colorectal cancer: a review and meta-analysis // Am J Med. –1999. – Vol. 106(5). – P. 574–582;

8. Bosetti C., Bravi F., Negri E., La Vecchia C. Oral contraceptives and colorectal cancer risk: a systematic review and meta-analysis // Hum Reprod Update. – 2009. – Vol. 15(5). – P. 489–498;

9. World Cancer Research Fund. Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective. – Washington, DC: AICR, 2007;

10. Fedirko V., Tramacere I., Bagnardi V. et al. Alcohol drinking and colorectal cancer risk: an overall and dose-response meta-analysis of published studies // Ann Oncol. – 2011. – Vol. 22(9). – P. 1958–1972;

11. Tsoi K.K., Pau C.Y., Wu W.K., Chan F.K., Griffiths S., Sung J.J. Cigarette smoking and the risk of colorectal cancer: a meta-analysis of prospective cohort studies // Clin Gastroenterol Hepatol. – 2009. – Vol. 7(6). – P. 682–688;

12. Renehan A.G., Tyson M., Egger M., Heller R.F., Zwahlen M. Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies // Lancet. – 2008. – Vol. 371(9612). – P. 569–578.