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Histological Characteristics of Colon Polyps in Patients of Grodno Region in 2022 (Belarus)

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Summary. *Colon polyps are benign tumor formations. The diagnostic difficulty of colon polyps is that the disease is often asymptomatic. Obviously, the decrease in the incidence of colorectal cancer is due to the timely detection, removal of benign polyps and prediction of the course of the disease in each individual case. We investigated the distribution of colon adenomas in patients of the Grodno region with the diagnosisof colon polyp(D12) treated at the Grodno University Clinic in 2022depending on the sex, age of the patient and the histological type of the tumor. It was found that in the patients in the age group of 35-50 years, the histological type tubular adenoma occurred significantly more often ($p < 0.05$) – in 45.3% of cases. With an increase in age, the proportionsof the histological types tubulovillous adenoma and villous adenomaincreased significantly ($p<0.05$) and the proportions of the histological types hyperplastic polyp and serrated adenoma decreased. In the patients in the age group above 65 years, the proportion of benign tumors of the histological type villous adenoma reached 36.3%. In the male patients,the histological type of tumor villous adenoma was significantly ($p<0.05$) more common(37.9% of cases), and the types hyperplastic polypand serrated adenoma occurred less often (1.3% and 6.6% of cases, correspondingly) than in the female patients.*

Keywords: *colon polyp, polyposis, rectum, sigmoid colon, colon, anal canal, Grodno region, Belarus, rural residents, urban residents, males, females.*

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I. INTRODUCTION

Colon polyps are benign tumor formations that are precancerous diseases. In most cases, it is the polyps of the colon, malignant transformation of which takes about 8-10 years, that subsequently lead to the development of colorectal cancer [1, 3]. The diagnostic difficulty of colon polyps is that the disease is often asymptomatic [2. 3]. Obviously, the decrease in the incidence of colorectal cancer is due to the timely detection, removal of benign polyps and prediction of the course of the disease in each individual case. Therefore, the study of this pathology is relevant for modern medicine [1, 2, 3].

II. EXPERIMENTAL PROCEDURE

Goal. To studythe distribution of colon adenomas in patients of the Grodno region with the diagnosis of colon polyp(D12) depending on the gender, age and the histological type of the tumor.

The study included 340 electronic medical records of patients hospitalized in the department of purulent surgery of the Grodno University Clinic with a diagnosis of colon polyp (D12) for colonoscopy in 2022.

Statistical data processing was carried out using the program «Statistica 13». LOG-linear analysis was used to assess the significance of the influence of factors. For the frequencies obtained (in fractions of a unit), Yates correction was applied. For each frequency, the value of φ – Fisher's auxiliary variable – was calculated in radian measure. For each obtained value of φ - Fisher's variable, a 95% confidence interval was calculated using a two-tailed t-test. The boundaries of the obtained confidence interval for φ - Fisher's variable, were recalculated into the boundaries of the confidence interval of the original variable – frequency. Further, in the text, the confidence interval is abbreviated CI, its boundaries are indicated in square brackets. The significance

of frequency differences was assessed using Fisher's auxiliary variable φ in radians and two-tailed t-test statistics (φt-test). The result was considered as statistically significant with the level of error of the first kind $p < 0.05$.

III. RESULTS AND DISCUSSIONS

In total, 340 case histories of patients of the Grodno University Clinic with a diagnosis of colon polyp (D12), who received treatment in 2022 were studied. The minimum and maximum ages of the examined patients were 31 and 78 years, respectively, with an average age of 61 years. Thenumberofmaleswas 172 people, females – 168. The number of patients and removed polyps, distributed by histological type of the tumor and by age groups is presented in Table 1.

Table 1 – Distribution of the number of patients with colon polyps by age depending on the histological type of tumor tissue.

Age	Groupof Patients	Histological type					
		H_0	H_1	H_2	H_3	H_4	Σ
Young (20-35 years old)	5	1	2	2	0	0	5
Mature (35-50 years old)	80	6	21	43	15	10	95
Elderly(50-65 years)	145	5	15	59	58	32	169
Senile (65 years and older)	110	5	8	43	57	44	157
General group:	340	17	46	147	130	86	426

Note: H_0 – hyperplastic polyp;H_1 –serrated adenoma; H_2 - tubular adenoma, H_3 – villous adenoma, H_4 – tubulovillous adenoma; Σ – the sum of the number of polyps per line.

According to the research results, the smallest number of patients was in the age group of 20-35 years: 1.5%, CI [0.5%; 3.0%], $p<0.05$.In this group, there were no statistically significant differences in the number of tumors of different histological types.

The age group of 35-50 years included 23.5% of patients, CI [19.2%; 28.2%]. Of these, in 45.3%of cases, CI [35.4%; 55.3%],the histological typetubular adenoma was reliably ($p<0.05$) more common than other types.

The age group of 50-65 years included the largest number of patients: 42.6%, CI [37.4%; 47.9%], $p<0.05$. In this group of patientsthe following histological tumor types occurred significantly more often ($p<0.05$): tubular adenoma – in 34.9% cases, CI [27.9%; 42.2%], villous adenoma– in 34.3% cases, CI [27.4%; 41.6%], tubulovillous adenoma in 18.9% cases, CI [13.4%; 25.2%].

A significant number of patients belonged to the group of 65 years and older: 32.4%, CI [27.5%; 37.4%]. Among the patients in this group, polyps of the following histological types were significantly more common ($p<0.05$): tubular adenoma– in 27.4% cases, CI [20.7%; 34.6%], villous adenoma– in 36.3% cases, CI [29.0%; 44.0%], tubulovillous adenoma– in 28.0% cases, CI [21.3%; 35.3%].

In the general group of patients (340 people), polyps of the following histological types were foundsignificantly more often ($p<0.05$): tubular adenoma in –34.5%cases, CI [30.1%; 39.1%], villous adenoma– in 30.5%cases, CI [26.2%; 35.0%], tubulovillous adenoma–in 20.2%cases, CI [16.5%; 24.1%].

Statistical analysis of the factors "age" and "histological type" showed their significant interaction ($p<0.05$): with increasing age of the patient, the frequency of detection of villous and tubulovillous adenomas increases and the frequency of detection of hyperplastic, serrated and tubular adenomas decreases. From the literature it is known that tubulovillous and villous adenomas are characterized by mutations (both congenital and acquired) in a larger number of proto-oncogenesas compared to hyperplastic, serrated and tubular adenomas. The established pattern, at least in part, can be explained by the fact that the number of accumulated mutations in the cells of the colon epithelium increases under the influence of harmful environmental factors over time. The second, no less important factor explaining this pattern may be that patients, with age, are less likely to go to the doctor, despite the manifestations of health disorders. This behavior is often observedin patients, according to literature sources.

The number of patients and removed polyps, distributed depending on the histological type of tumor and sex, is presented in Table 2.

Table 2 - Distribution of the number of patients with colon polyps by sex, depending on the histological type of tumor tissue.

Sex	Group of patients	Histological type					
		H_0	H_1	H_2	H_3	H_4	Σ
Male	172	3	15	78	86	45	227
Female	168	14	31	69	44	41	199
General group:	340	17	46	147	130	86	426

Note: H_0 – hyperplasticpolyp; H_1 – serrated adenoma; H_2 - tubularadenoma, H_3 – villousadenoma, H_4 – tubulovillous adenoma.

According to the research, the proportion of males was 50.6%, CI [45.3%; 55.9%]. In this group, benign tumors, according to their histological type, were distributed as follows: hyperplastic polyp - 1.3% cases, CI [0.3%; 3.2%], serrated adenoma - 6.6% cases, CI [3.8%; 10.2%],tubular adenoma - 34.4% cases, CI [28.3%; 40.7%], villous adenoma - 37.9% cases, CI [31.7%; 44.3%],tubulovillous adenoma - 19.8% cases, CI [14.9%; 25.3%]. The histological types tubular adenoma and villous adenoma occurred significantly more often ($p<0.05$) than othertypes. The histological type tubulovillous adenoma was less common, however, it represented a significantly larger proportion ($p<0.05$) than the types hyperplastic polyp and serrated adenoma.

The proportion offemales in the general group was 49.4%, CI [44.1%; 54.7%]. In this group, benign tumors, by their histological type, were distributed as follows: hyperplastic polyp - 7.0% cases, CI [3.9%; 11.0%], serrated adenoma - 15.6% cases, CI [10.9%; 20.9%], tubular adenoma - 34.7% cases, CI [28.2%; 41.4%], villous adenoma - 22.1% cases, CI [16.6%; 28.1%],tubulovillous adenoma - 20.6% cases, CI [15.3%; 26.5%]. The histological type tubular adenoma occurred among female patients significantly more often ($p<0.05$) than othertypes. The histological typesserrated adenoma, villous adenoma, and tubulovillous adenoma in the female group were characterized by approximately equal proportions, without statistically significant differences between them. The histological type hyperplastic polyp occurredin the female group significantly less often ($p<0.05$) than all other types of benign tumors of the colon.

Statistical analysis of the factors "sex" and "histological type" showed their significant interaction ($p<0.05$):the male patients more often had a histological type of benign tumor of the colon villous adenoma, and less often the types hyperplastic polyp and serrated adenoma than the female patients. According to the literature, a benign tumor of the colon, belonging to the histological type villous adenoma has the highest potential for malignant transformation. The established pattern may be due to both the influence of more harmful environmental factors and less resistance to them of the male body.

IV. CONCLUSION

In the patients with benign tumors of the colon, aged 35-50 years, the histological type tubular adenoma occurs reliably ($p<0.05$) more often than other histological types – in 45.3% cases, CI [35.4%; 55.3%]. In the patients with benign tumors of the colon, with an increase in age, the proportions of histological types tubulovillous adenoma and villous adenoma significantly ($p <0.05$) increase, while the proportions of the histological types hyperplastic polyp and serrated adenoma decrease. In the patients with colon polyps, in the age group over 65 years, the proportion of benign tumors belonging to the histological type villous adenoma reaches 36.3%, CI [29.0%; 44.0%]. In the male patients with colon polyps,the histological type of tumor villous adenoma is significantly more common ($p<0.05$) –37.9% cases, CI [31.7%; 44.3%] and the types hyperplastic polyp and serrated adenoma occur less often –1.3% cases, CI [0.3%; 3.2%] and 6.6% cases, CI [3.8%; 10.2%], than in the female patients.

Conflict of interest

There is no conflict to disclose.

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