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Surgical Treatment of Malignant and Benign Colorectal Neoplasms Based On Authors' Clinical Data

Postępowanie chirurgiczne w nowotworach złośliwych i łagodnych jelita grubego w materiale własnym

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Abstract

Background. Colorectal cancer remains a huge diagnostic and therapeutic issue in Poland and worldwide. World epidemiological data indicates a constant increase in morbidity in recent decades.

Objectives. The aim of this research was to present surgical procedures in malignant and benign colorectal neoplasms based on authors' clinical data.

Material and Methods. Between 2001 and 2010, in the 1st Department of General and Endocrinological Surgery in Białystok, 754 patients with malignant colorectal cancer were hospitalized. Precancerous conditions which included polyps and non-specific bowel inflammations were observed in 491 and 52 patients, respectively.

Results. The most frequent location of a malignant colorectal tumor was the rectum – 271 (35%) cases and sigmoid colon – 235 (31%) cases. In 8 cases (1%), a multifocal location of colorectal neoplasm was observed. Similar locations were observed in the case of polyps. They were observed the most frequently in the sigmoid colon – 144 (29.3%) cases and rectum – 122 (24.8%) cases. In the cases of colorectal cancer located in the rectum (271), the most frequently applied procedure was abdomino-perineal amputation – 102 (37.6%) patients (T1-3 N1-2 M0). In sigmoid colon cancer (235 cases), sigmoid colon resection was performed most frequently – in 175 patients (74.5%) (T1-3 N0-2 M0-1). Right hemicolectomy was performed in 120 (T1-4 N0-2 M0-1) patients and left hemicolectomy in 52 (T1-4 N02 M0-1) patients. In 482 cases, endoscopic resection of polyps was performed and in 9 patients resection through laparotomy. The majority of operations were performed according to plan, however, many of them were performed in emergency.

Conclusions. Colorectal cancers, irrespectively to their location, develop secretly without any symptoms in the early stages which is the reason why patients contact a doctor in the late stadium of the disease. It is also the cause for a majority of the procedures performed in emergency. The best prognosis and long-term results are obtained with treatment combined with radio- and chemotherapy (*Adv Clin Exp Med* 2013, 22, 2, 219–227).

Key words: colorectal cancer, surgical treatment.

Streszczenie

Wprowadzenie. Nowotwory jelita grubego pozostają istotnym problemem diagnostycznym i leczniczym zarówno w Polsce, jak i na świecie. Ogólnoświatowe dane wskazują na stały wzrost zachorowalności w ostatnich dekadach.

Cel pracy. Przedstawienie postępowania chirurgicznego w nowotworach złośliwych i łagodnych jelita grubego w materiale własnym.

Materiał i metody. W latach 2001–2010 w I Klinice Chirurgii Ogólnej i Endokrynologicznej w Białymstoku leczono 754 chorych z nowotworem złośliwym jelita grubego. Stany przedrakowe, do których zalicza się polipy i nieswoiste zapalenia jelita grubego rozpoznano odpowiednio u 491 i 52 chorych.

Wyniki. Najczęstszym umiejscowieniem nowotworu złośliwego jelita grubego była odbytnica – 271 (35%) oraz esica 235 (31%). U 8 (1%) chorych stwierdzono wieloogniskowe umiejscowienie nowotworu jelita grubego. Podobne umiejscowienie dotyczyło polipów jelita grubego. Najczęściej stwierdzano je w esicy u 144 (29,3%) i w odbytnicy u 122 (24,8%) chorych. W przypadku raka jelita grubego umiejscowionego w odbytnicy najczęstszą wykonywaną

operacją była amputacja brzuszno-kroczoza u 102 (37,6%) (T1-3 N1-2 M0) chorych, a w przypadku raka esicy najczęściej wykonano resekcję esicy u 175 (74,5%) (T1-3 N0-2 M0-1) chorych. Hemikolektomię prawostronną wykonano u 120 (T1-4 N0-2 M0-1) chorych, a hemikolektomię lewostronną u 52 (T1-4 N0-2 M0-1) chorych. U 482 chorych wykonano endoskopowe wycięcie polipów, a u 9 chorych wycięcie przez laparotomię. Większość operacji (75,5%) wykonano w trybie planowym, ogromną ich część przeprowadzono jednak w trybie ostrego dyżuru.

Wnioski. Nowotwory jelita grubego niezależnie od umiejscowienia rozwijają się skrycie, nie dając objawów we wczesnym stadium, co powoduje, że chorzy często zgłaszają się do chirurga w zaawansowanym stadium choroby. Jest to również przyczyną dużego odsetka zabiegów wykonywanych w trybie ostrego dyżuru. Najlepsze odległe wyniki i rokowanie uzyskuje się w przypadku leczenia chirurgicznego skojarzonego z radio- i chemioterapią (*Adv Clin Exp Med* 2013, 22, 2, 219–227).

Słowa kluczowe: nowotwory jelita grubego, leczenie chirurgiczne.

Colorectal cancer remains a huge diagnostic and therapeutic issue in Poland and worldwide. World epidemiological data indicates a constant increase in morbidity in recent decades. In 2000, in our country, 5837 cases of colorectal cancer in men and 5291 cases in women were registered [1]. In men, the standardized index of morbidity in 100,000 was 12.4 for colon cancer and 9.6 for rectal cancer and in women it was respectively 8.7 and 5.3 [2, 3]. In 2003, in the USA, 150,000 new cases of colorectal cancer were registered – 72,800 in women and 74,700 in men. Respectively, 28,300 women and 28,800 men died [4, 5].

In 2000, in Poland, 4373 men and 4144 women died from colorectal cancer, and the number of new cases is constantly increasing. The standardized index of mortality in men in 100,000 was 11.1 for colon cancer and 4.7 for rectal cancer and for women it was respectively 7.0 and 2.7. The expected rate of mortality from colorectal cancer in the USA will increase from 510,000 in 2000 to 1 million in 2050 [4, 5]. The possibility of survival for 5 years after colon cancer depends on gender and it is 30.8–32.4% and for rectal cancer it is 24–33.2%. (In Western Europe those rates reach 50%.)

Independent of the location, colorectal cancer develops silently without early symptoms which is the reason why patients only visit a doctor in the advanced stage of the disease. Many factors are connected with the incidence of colorectal cancer, among which the most important are age, inflammatory bowel diseases, colorectal polyposis, genetic predisposition to develop colorectal cancer, family history of hereditary colorectal cancer as well as environmental and dietetic factors: lack of physical activity, obesity, smoking and alcohol consumption [6]. The risk distinctly increases with age. In patients between 45 and 49 years old, the rate of registered cases is twice as high as between 40 and 44 years old and 3 times higher than in patients between 35 and 39 years old. The highest risk is in the 8th decade of life [1]. In order to estimate the severity, there is a necessity to perform an abdominal and pelvis ultrasonography and/or

CT, thorax RTG and assay of carcinoembryonic antigen (CEA). In some cases, transrectal USG and pelvis MRI are recommended. Abnormalities in laboratory tests result in the majority of patients indicating microcytic anemia and a positive result of a fecal occult blood test. In the case of tumors which are placed low but are movable in per rectum examination, a preoperative estimation of local development is recommended due to its influence on treatment selection. Transrectal USG and pelvis MRI make it possible to evaluate the extent of tumor invasion in rectal tissue and determine indications for preoperative radiotherapy. Specific groups of patients are those suffering from inflammatory bowel diseases and with genetic predisposition to develop colorectal cancer. Colorectal cancer is the most serious complication of chronic inflammatory bowel diseases, which may appear 7–10 years after recognition of the disease [7–10].

Surgical treatment depends mainly on the stadium of the tumor and patient's clinical state as well as on the occurrence of respiratory and circulatory system diseases.

The aim of this research was to present surgical procedures in malignant and benign colorectal tumors based on the present clinical data.

Material and Methods

Between 2001 and 2010, in the 1st Department of General and Endocrinological Surgery in Białystok, 754 patients with malignant colorectal cancer were hospitalized. The age of patients was between 38 and 92 years old (average age 56.5). This group consisted of 305 (40.5%) women and 449 (59.5%) men. Precancerous conditions which included polyps and non-specific bowel inflammations were observed in 543 patients, 17–78 years old (average age 48). Polyps occurred in 491 patients – 213 (43.4%) in women and 278 (56.6%) in men.

The most frequent locations of colorectal cancer were the rectum – 271 (35%) and sigmoid colon – 235 (31%). Other locations, in descending



Fig. 1. Cecum cancer lead to ileus

Ryc. 1. Rak kątnicy powodujący niedrożność

order, were the cecum (Figure 1) and ascending colon – 127 (17%), descending colon – 56 (7.5%), transverse colon – 26 (3.5%), splenic flexure – 19 (2.5%) and hepatic flexure – 12 (1.5%). In 8 (1%) cases, multifocal colorectal cancer was observed, in 2 of them the tumor occurred simultaneously in the rectum and sigmoid colon while in 3 cases the multifocal location was observed in the sigmoid colon (Figure 2 a, b). Multifocal location occurred once in the cecum. In 1 case, two focuses of cancer were observed in the transverse colon and hepatic flexure and in 1 case, the tumor was stated simultaneously in the cecum and transverse colon (Figure 3, Table 1).

Similar locations regarded colorectal polyps – the majority of benign colorectal lesions. Polyps occurred the most frequently in the sigmoid colon – 144 (29.3%) and rectum – 122 (24.8%) cases. Other cases of colorectal polyps are presented in Table 2.

Multifocal location of polyps was observed in 108 patients (22%). The most frequently, in 32 (30%) cases, were stated in the sigmoid colon. The other locations and occurrences are presented in Table 3.

After surgical treatment, all patients were transferred to the Oncology Center in order to qualify them for further chemo- and radiotherapy.

Results

The type of surgical treatment and the scope of malignant colorectal tumor operations depended in the present material on the stadium of the cancer, TNM, age, co-morbidities as well as on the mode of surgical procedure, connected with bowel obstruction or bleeding from the tumor (Table 4).



Fig. 2a. Multifocal location of cancer in the sigmoid colon

Ryc. 2a. Wieloogniskowe umiejscowienie raka w obrębie esicy



Fig. 2b. Multifocal location of cancer in the sigmoid colon

Ryc. 2b. Wieloogniskowe umiejscowienie raka w obrębie esicy

In cases of colorectal cancer located in the rectum, the most frequently applied procedure was abdomino-perineal amputation (37.6%). In 32% of patients, anterior resection with end-to-end anastomosis was performed. In 59 cases, a stapler (29–33 mm) was used and in 27 cases it was performed manually. The remaining procedures connected with colorectal cancer are presented in Table 4.

In the group of patients after operations of

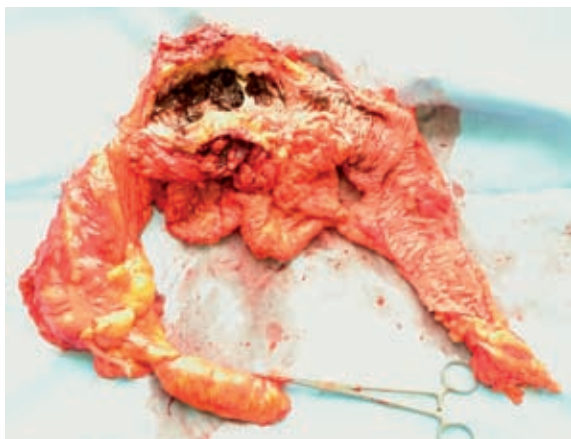


Fig. 3. Doublefocal cancer in the location of the hepatic flexure and transverse colon

Ryc. 3. Dwuogniskowy guz umiejscowiony w zagięciu wątrobowym i poprzeczniczy

rectal cancer, 58 (22%) were treated with radiotherapy. Preoperative radiotherapy was applied in 38 (14%) patients.

In sigmoid colon cancer, sigmoid resection was performed the most frequently (74.5%). In this group, 21 patients underwent laparoscopic resection with end-to-end anastomosis. According to descending colon location, extensive size of the tumor and metastases to mesenterium, in 12.5% of cases, left hemicolectomy was performed. In 13% of cases, only colostomy was applied – in 21, the stoma was emerged due to the spread of cancer and in 10 cases, when the procedure was performed in emergency and was connected with occlusion and inoperable state, deferred stoma was applied. In cecum and ascending colon cancer, the most frequently applied procedure was right hemicolectomy – 94.5% of patients. The proce-

Table 1. Location and occurrence of multifocal colorectal cancer

Tabela 1. Umieszczenie i postępowanie w przypadku wielogniskowych raków jelita grubego

	Number of patients (Liczba pacjentów)		Procedure (Zabieg chirurgiczny)
	N	%	
Generally (Ogólnie)	8	1	
rectum + sigmoid colon	2	25.0	anterior rectal resection + sigmoid colon resection
sigmoid colon	3	37.5	2 sigmoid colon resections
cecum	1	12.5	1 left hemicolectomy
cecum+transverse colon	1	12.5	right hemicolectomy
hepatic flexure + transverse colon	1	12.5	extended right hemicolectomy

cedure was performed laparoscopically in 5 patients with anastomosis through mini laparotomy. Evasive anastomosis was applied in 2.4% of patients. Due to occlusion and the advanced stage of the cancer, in 3.1% cases ileostomy was conducted. The most frequent treatment, in cases of cancer located in the descending colon, was left hemicolectomy – 93% of cases. In 7% of patients, bypass anastomosis was applied. In transverse colon cancer, transverse colon resection was performed the most often – in 42.5% of patients. 89.5% of patients with splenic flexure cancer were treated with left hemicolectomy. In the remaining 10.5% of cases with extensions to spleen, stomach and metastases to lymph nodes and liver, bypass anastomosis was performed. Similar treatment was applied in patients with hepatic flexure cancer – right hemicolectomy was performed in 91.5% of cases and bypass anastomosis in the remaining 8.5%. The detailed surgical procedures according to colorectal cancer are presented in Table 4. In the case of a multifocal location of colorectal cancer (1% of

cases – 8 patients), the procedures performed are presented separately in Table 1.

The majority of operations were performed according to plan, after preparation, however, many of them were performed in emergency. The operations of rectal cancer were performed according to plan in 75.5% of cases and the remaining 24.5% in emergency. Similarly, sigmoid colon cancer was treated according to plan in 79.7% of cases and the remaining cases in emergency. 77% of cases of cancer recognized in the cecum and ascending colon were elective and 23% of cases in emergency. 93% of cases of descended colon cancer were planned and 7% were performed as emergency operations. Transverse colon cancer was operated on according to plan in 81% of cases and as an emergency in 19% of cases. 84% of cases of splenic flexure cancer were treated electively and 6% were emergency. In the present material, hepatic flexure cancer was not operated in terms of emergency – all 12 cases were treated according to plan. Operations of multifocal tumors, in 75% of cases were planned and in

Table 2. Location and occurrence of colorectal polyps**Tabela 2.** Umiejscowienie i postępowanie w przypadkach polipów jelita grubego

Localization (Umiejscowienie)			Procedure (Zabieg chirurgiczny)		
	number of patients			number of patients	
	N	%		N	%
Generally (Ogólnie)	491		Generally (Ogólnie)	491	
sigmoid colon	144	29.3	endoscopic resection	482	98.2
rectum	122	24.8			
cecum and ascending colon	51	10.3			
descending colon	36	7.3	surgical	9	1.8
splenic flexure	14	3.0			
transverse colon	11	2.3			
hepatic flexure	5	1.0			

Table 3. Location and occurrence of multifocal colorectal polyps**Tabela 3.** Umiejscowienie i postępowanie w przypadku wieloogniskowych polipów jelita grubego

Localization (Umiejscowienie)			Procedure (Zabieg chirurgiczny)		
	number of patients			number of patients	
	N	%		N	%
Generally (Ogólnie)	108	22	Generally (Ogólnie)	108	22
sigmoid colon	32	30	endoscopic resection	102	94.5
rectum+sigmoid colon	28	26			
rectum	21	19	surgical	6	5.5
multifocal	27	25			

the remaining 25% were performed as emergency operations (Table 5).

48 (6.4%) patients underwent resection of a simple metastatic hepatic tumor during the original colorectal cancer operation. For the rest of the patients with hepatic metastases, thermal ablation was applied. In 1 (1%) patient, a synchronous tumor of the sigmoid colon and stomach was observed. In this case a total gastrectomy was performed next to the sigmoid colon tumor resection during the same operation.

In 491 patients with colorectal polyps, the type of procedure depended on the result of a histopathological examination of a sample taken during colonoscopy. In 482 cases, endoscopic polyp removal was applied and in 9 cases surgical resection was instituted according to the histological pattern of the tumor. Multifocal polyps were recognized in 108 (22%) patients among which 102 (94.2%) underwent endoscopic resection.

Discussion

Malignant colorectal cancer is a constantly growing socio-economic issue in Poland and the world. Almost 138,500 new cases in Poland, 91,500 deaths per year and approximately 390,000 patients with cancer at the beginning of the 21st century reveal the scale of the problem in our country. 330 patients out of every 100,000 in Polish population have had a tumor and approximately 240 of them have died because of this disease [9]. Colorectal cancers are developing the most dynamically and are in the second place according to the frequency of occurrence. It is also in second place among malignant cancer incidence in women and men and with regard to mortality rate [10]. About 45% of colorectal cancer cases are located in the rectum and 30% in the sigmoid colon. In 3–5% of patients, multiple tumors are recognized [11]. Similar results were obtained in the present material – 35% of cases were located in the rectum and 31% in the

Table 4. Surgical procedures according to colorectal cancer with TNM classification**Tabela 4.** Zabiegi wykonane z powodu raka jelita grubego wraz z klasyfikacją TNM

Localization (Umiejscowienie)	Type of procedure (Rodzaj zabiegu chirurgicznego)	Number of patients (Liczba pacjentów)		TNM Classification (Klasyfikacja TNM)
		N	%	
Rectum (Odbytnica) N = 271	abdomino-perineal rectum amputation	102	37.6	T1-3 N1-2 M0
	anterior rectal resection	86	32.0	T1-3 N1-2 M0
	stoma	58	21.4	T2-4 N1-2 M0-1
	Hartmann's operation	25	9.0	T2-4 N2 M1
Sigmoid colon (Esica) N = 235	sigmoid colon resection	175	74.5	T1-3 N0-2 M0-1
	colostomy	31	13.0	T4 N0-2 M1
	left hemicolectomy	29	12.5	T1-4 N0-1 M0-1
Cecum and ascending colon (Kątnica i wstępnica) N = 127	right hemicolectomy	120	94.5	T1-4 N0-2 M0-1
	evasive anastomosis	3	2.4	T3-4 N2 M1
	ileostomy	4	3.1	T4 N2 M1
Descending colon (Zstępnica) N = 56	left hemicolectomy	52	93.0	T1-4 N0-2 M0-1
	evasive anastomosis	4	7.0	T4 N2 M1
Transverse colon (Poprzecznicza) N = 26	left hemicolectomy	6	23.0	T1-4 N0-1 M0
	transverse colon resection	11	42.5	T1-4 N0-1 M0
	evasive anastomosis	6	23.0	T4 N2 M1
	ileostomy	3	11.5	T4 N1-2 M1
Splenic flexure (Zagięcie śledziony) N = 19	left hemicolectomy	17	89.5	T1-3 N1-2 M0
	evasive anastomosis	2	10.5	T4 N2 M1
Hepatic flexure (Zagięcie wątrobowe) N = 12	right hemicolectomy	11	91.5	T1-4 N1-2 M0
	evasive anastomosis	1	8.5	T4 N2 M1

sigmoid colon. Multifocal location was observed in 1% of treated patients.

Diagnosis of colorectal cancer is based on clinical presentation as well as on endoscopic and imaging examinations. The most frequent symptoms are changes in defecation, abdominal pain and flatulence, dark-colored stool, losing weight and lack of appetite. The basis for diagnostics is endoscopy which allows recognition of the tumor, sampling and examination of other parts of gastrointestinal tract with respect to synchronous tumors. However, it has to be mentioned that colonoscopy is not responsive enough. Many tumors may be overlooked especially by inexperienced doctors [12–14]. It is estimated that 15–50% of small tumors, commonly of the adenoma type, are overlooked during colonoscopy [13, 15]. Similarly, approximately 6–12% of tumors with a diameter > 1 cm [14, 16] and approximately 4% of cancers remain unnoticed during colorectal endoscopy [17].

It has been proved that the result of preoperative colonoscopy may change a planned surgical procedure in 10% of cases. Valid microscopic diagnosis may be obtained after taking a deep sample from a polypoid tumor invasion or from the mar-

gin of an ulcerous invasion [1]. If this is not possible, it is necessary to perform a full colonoscopy in order to reveal synchronic changes.

Almost 20% of patients with colorectal cancer undergo emergency operations without previous microscopic diagnosis relating to the complications of cancer (e.g. a rupture in the gastrointestinal tract, occlusion or hemorrhage) [18, 19]. Similar results were observed in the present material. It has been proved that the rate of postoperative mortality is higher in patients operated on immediately [20]. In the present material the authors did not notice any severe postoperative complications in this kind of situation. Also the authors did not operate on hepatic flexure cancer as an emergency. Patients who underwent planned operations had been prepared using polyethylene glycol. Preparing patient with laxatives is nowadays very controversial and is provoking discussion about its validity. Antibiotic prophylaxis was applied intravenously as well as anticoagulants [18, 21].

The foundation for colorectal cancer treatment is surgery. Radical procedures in most cases make it possible to reconstruct the continuity of the gastrointestinal tract with oncological radical-

Table 5. Treatment of colorectal cancer**Tabela 5.** Postępowanie w raku jelita grubego

Localization (Umiejscowienie)	Mode (Rodzaj)			
	planned		emergency	
	number of patients		number of patients	
	N	%	N	%
Rectum (Odbytnica)	205	75.5	66	24.5
Sigmoid colon (Esica)	189	79.7	48	20.3
Cecum and ascending colon (Kątnica i wstępna)	98	77.0	29	23.0
Descending colon (Zstępna)	52	93.0	4	7.0
Transverse colon (Poprzeczna)	21	81.0	5	19.0
Splenic flexure (Zagięcie śledziony)	16	84.0	3	6.0
Hepatic flexure (Zagięcie wątrobowe)	12	100.0	0	0
Multifocal (Wielogniskowe)	6	75.0	2	25.0

ness at the same time. A higher percentage of the reconstructed continuity of the gastrointestinal tract has been noticed due to a broader application of circular staplers [20, 22, 23].

In some forms of early tumors, there is a possibility of local resection (tumors with diameter < 3 cm, differentiated histologically). In colorectal cancer treatment, chemotherapy is also applied, which is standard complementary treatment after surgery in B2 and C stages according to Dukes. Radiotherapy is also used, in the case of rectal cancer, as a preoperative procedure or complementary treatment after the surgery. Chemotherapy and radiotherapy are also applied as independent methods in the palliative treatment of patients with non-operative colorectal cancer [24]. In the present material, 137 (18.2%) advanced cancers, with metastases and extension to near organs were observed. In these cases, palliative surgical procedures were performed.

The stadium of colorectal cancer is the most important predictive factor. The method of treatment depends on the stadium and location of the tumor. Differences regard preoperative treatment,

scope of the operation and technique as well as postoperative steps. In the case of colorectal cancer, the method depends on the location – above (colon or upper part of the rectum) or under the peritoneal fold (central and lower part of the rectum).

In the case of cancer in stadium 0 and 1 located under the peritoneal fold, only surgical treatment is applied. In stadium 2, the method of choice is radiotherapy with possible subsequent chemotherapy. In stadium 3 of cancer, radio- and radiochemotherapy is applied with further chemotherapy. Managing tumors in stadium 4 includes palliative surgical treatment and application of radio- and chemotherapy at the same time [10, 18, 24].

In the case of colorectal cancers located above the peritoneal fold, the method of choice is surgical treatment in all stages with possible postoperative chemotherapy. In stage 2 after the surgery, application of radiotherapy may be considered. In stage 3, subsequent chemotherapy is always applied. Managing with tumors in stadium 4 includes palliative surgical treatment and application of radio- and chemotherapy at the same time [11, 18, 24].

Radiotherapy is used as a part of preoperative preparation, radical treatment (complementary treatment) or a method of palliative therapy, mainly in cases of rectal cancer. Preoperative radiotherapy decreases the risk of local regression and increases the percentage of survivals. It also brings less risk of complication than usually applied postoperative radiotherapy. In cases of originally unrespectable rectal tumors, application of conventional radiochemotherapy makes it possible to perform surgery, radical by nature, in 50% of patients. However, there are some inconveniences resulting from preoperative radiotherapy, for instance, a higher risk of infection, delayed healing of the peritoneal wound after abdomino-peritoneal amputation and the necessity to combine the date of the surgery with the end of radiotherapy. Surgical treatment should be performed a maximum of 7 days after radiotherapy, before acute radiation syndrome [15, 18, 24].

In the case of colorectal cancer, surgery is usually performed 6–8 weeks after the radiation. The break is necessary in order to obtain tumor regression and complete recovery of radiation syndrome. Reduction of tumor size after radiochemotherapy as well as a high percentage of complete remissions (15–20%) seem to be the most important advantages of this preoperative method [15, 24].

Postoperative radiotherapy is also applicable. Recommendations for this method, for instance, invasion of peri-intestinal adipose tissue as well as lymph nodes, dissemination along nerve fibers, tumor cell embolism in blood and lymphatic vessels,

low grade of tumor maturity (G III) and perforation of the wall of the intestine by cancer or by the surgeon are unfavorable predictive factors stated in a pathomorphological examination of operative samples. Unintentional, iatrogenic perforation significantly increases the risk of recurrence [15–18].

Palliative radiotherapy plays an important role in pain alleviation, reduction of bleeding and occlusion symptoms connected with local regression of rectal cancer as well as in the alleviation of symptoms associated with metastases [18, 24].

Recommendations for complementary (post-operative) chemotherapy in colorectal cancer are unfavorable predictive factors identical to those connected with postoperative radiotherapy. Currently, routine chemotherapy is not recommended in all patients suffering from colorectal cancer in generalized stadium. Palliative chemotherapy applied in properly qualified patients may lead to periodic improvement in quality of life and its significant prolongation in comparison to patients treated only symptomatically [17, 18, 24].

The type of operative technique most significantly influences the results of treatment. Differences in chosen procedures are reflected in the percentage of local regressions and time of survival after the surgery. The choice of a particular procedure should depend not only on the patient's general state and disease stadium but also on the surgeon's experience and abilities [18].

Concerning tumors placed below the peritoneal fold or at the same height, the choice of surgical treatment depends mainly on the size of the tumor. In small tumors – 3 cm or less – in the TNM or T1 N0 stage and without invasion of sphincters, local resection through the rectum performed from the posterior part or using surgical anoscope may be applied. In this case, anterior resection or abdomino-peritoneal amputation may be an alternative for local resection. In tumors placed above the peritoneal fold, the method of choice is radical surgical procedure which saves sphincters. Abdomino-peritoneal amputation is valid when sphincter functions are impaired or when carcinogenic diseases (e.g. polyps) are developing in the part of the rectum under the tumor. Abdomino-peritoneal amputation may be associated with a higher frequency of occurrence of local regression or lower oncological radicalness [21].

In cases of rectosigmoid flexure cancer, the scope of bowel resection is strictly connected with tumor location and the necessity to remove blood and lymphatic vessels supporting the part of the bowel with the tumor. Regarding colon tumors, lymphadenectomy should reach the vent of the main upper arterial vessel. It has to be mentioned

that the proximal and distal bowel margin should be equal to 5 cm.

Instructions for rectal cancer treatment establish the optimal bowel distal margin at 2 cm and 5 cm for proximal margin, excluding adenocarcinoma with a low level of differentiation where the margins should have at least 5 cm [23, 24].

It is not a subject for discussion that in every case, the whole peritoneal cavity should be precisely examined in order to assess the primary tumor, regional lymph nodes, the presence of distant metastases and the state of other organs. Resection of the rectum along with the lymphoid system and blood vessels should include an anatomically wide resection of the full mesorectum with fascia, at least 4 cm below the lower line of the tumor. It should also include the ligation in the area of the proximal part of the main arterial vessel (inferior mesenteric artery or superior rectal artery according to the vascularization variant and operation planned) [18, 21, 24].

Recently, laparoscopy is the method of choice for the majority of planned colorectal and rectal operations performed in well-equipped centers using a harmonic knife or Liga-Sure as well as circular and linear staplers. No differences were stated in the risk of regression and total survival, however laparoscopic procedures have a lot of commonly known advantages and are connected with a shorter time of hospitalization and lesser demand for analgesics [25]. In authors' department, laparoscopic performance of laparoscopic procedures in colorectal cancer was launched in 2007 and is still improving. Until this moment the authors have operated on 36 patients.

The basis in managing colorectal cancers is surgical treatment – radical or palliative. Currently the best results are obtained by adjuvant and neoadjuvant treatment. Approximately 20% of colorectal cancer surgeries are performed as an emergency without preparation of the patient. These surgeries are performed mainly due to occlusion or gastrointestinal bleeding.

Despite the development in medicine, colorectal cancers remain an important diagnostic and therapeutic issue. Malignant tumors, irrespectively to their location, develop secretly without any symptoms in the early stages, which is the reason patients only contact a doctor in late stadium of the disease. This is also a cause of some procedures being performed as an emergency. Based on the present material and world data, a constant increase in the number of cases of malignant and benign colorectal cancer can be observed. Combined treatment gives the best result.

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