

Colorectal carcinoma/therapy

250px|thumb|Kolorektální karcinom

The method of treatment of CRCA can be determined only after a complete examination of the patient and determination of the staging of the disease. Each patient should be consulted at an indication seminar and the resulting treatment should be the result of the consensus of an oncologist, surgeon, gastroenterologist, or even a pathologist. The therapeutic procedure must also always depend on the overall health of the patient and his wishes.

The treatment modalities used to treat CRCA include **endoscopic** , **surgical** and **oncological** methods . Usually, the tumor mass is first removed, either endoscopically or more often surgically, followed by systemic oncological treatment. In the case of large tumors, the surgical solution is preceded by neoadjuvant oncological therapy .

The treatment procedures for KR-CA located in the colon and rectum differ slightly.

Endoscopic treatment

Its importance is irreplaceable, especially in **the diagnosis** of the disease and the subsequent **dispensarization** of patients after treatment. It is mainly used for the **curative treatment of precancerous lesions** (adenomas) or **very early stages** of CRCA (carcinoma in situ, pT1), or for **palliative treatment** to clear the bowel stenoses caused by the tumor (stent insertion).

Curative treatment

Depending on the extent of the lesion, we use:

- **polypectomy** (EPE),
- **endoscopic mucosal resection** (EMR),
- **endoscopic submucosal dissection** (ESD) – removal of polyps together with submucosa.

In patients diagnosed with KR-CA pT1, we decide between endoscopic or surgical solutions according to other parameters. Endoscopic treatment is sufficient for favorable tumors, however, we approach the subsequent surgical solution for so-called high-risk pT1 carcinomas. Criteria for high-risk cancer:

- incomplete removal or removal in parts (not en block);
- distance from resection edges 1 mm and less;
- low differentiation;
- evidence of invasion of lymphatic vessels in a histological specimen.

In these patients we perform surgical resection with radical lymphadenectomy as well as in more advanced stages of CRCA.

Palliative treatment

The application of a metallic stent is used either in acute intestinal obstruction to **survive the time** to the surgical solution, or in inoperable and generalized cancers **in the last stages to improve the patient's quality of life** . However, according to various studies, the usefulness of these procedures is questionable. It should only be used in carefully indicated cases after interdisciplinary consultation. Patients indicated for biologic therapy with **bevacizumab** have been shown to be at increased risk of perforation. ^[1]

Surgical treatment

Still the only curative treatment for colorectal cancer is **oncoradical resection** (except for the very early stages that can be treated endoscopically, see the previous paragraph). It is indicated whenever it is possible to perform a **curative radical (R0) resection** , ie to remove the entire tumor mass. Possibly also for palliative reasons, similarly to endoscopic treatment, to pass through the intestinal lumen and thus to prolong and improve the quality of life of the patient.

Colon resection

For colon cancer, we use **radical resection** of the affected section of the intestine together with the removal of the mesentery (mesocolon). The advantage of this procedure is the removal of a larger number of lymph nodes (at least 12), the removal of potentially tumor-damaged tissue and the reduction of postoperative tumor spread. We observe radicality even in earlier stages (T1, T2). If the tumor is unfavorably located in the basin of two supplying arteries, we proceed to even more radical procedures - **extended resection** , or **subtotal colectomy**(removal of the entire colon, leaving the rectum and establishing an ileorectal anastomosis). The distance at the aboral end should be at least 5 cm from the tumor. The extent of resection is determined by the extent of dissection of the lymph nodes (and vessels) along the arterial supply, when the ligation occurs near the distance of the arteries (high ligation):

- **right hemicolectomy** - ligature of *a. ileocolica* , *a. colica dextra* and *ramus dexter arteriae colicae mediae* (ascending colon tumor);
- **extended right hemicolectomy** - ligature of the *ileocolica* , *a. colica dextra* and in addition *a. colica media* (for tumors in the *flexura coli dextra*);
- **left hemicolectomy** - ligature of the *colic sinistra* (descending colon tumor);
- **extended left hemicolectomy** - ligature of the *a. colica sinistra* and *a. colica media* (tumor in *flexura coli sinistra*);
- **sigma resection** - ligatures of the *inferior mesenteric artery* . [2]

The laparoscopic approach is a used alternative to the classical procedure, especially in tumors of the left colon. [1]

Rectal resection

The most commonly used procedure is **total mesorectal excision (TME)** , which significantly reduces the incidence of local recurrences. The prognostic factor for the success of TME is mainly the positivity of the resection margins. Today we use modern **mini-invasive, robotic and laparoscopic methods** , which are still radical enough, but at the same time less mutilating for the patient. Surgical procedures can be divided into:

- **Curative performances** (potentially):
 1. standard operation - resection of the rectum (+ mesorectum), it can be with amputation of the sphincter, but also preserving the sphincter (it is also sufficiently oncoradical);
 2. extensive surgery - resection of the rectum, mesorectum and abdominopelvic lymph nodes and vessels;
 3. ultraextensive surgery - in addition with resection of the internal iliac vessels. [2][2]
- **Palliative procedures** consist of:
 1. tumor removal - in most cases it is better to remove the tumor, even if curative resection is ruled out for staging the disease or the overall condition of the patient, any growing tumor of the patient threatens the formation of ileum , perforation of the intestinal wall, tumor disintegration (necrosis);
 2. solving an obstacle in the passage of the intestine (which is a tumor) -by a colonostomy or bypass;
 3. pain treatment.

Resection of liver metastases

The liver is the organ where we most often find CRCA metastases and their treatment is closely related to the patient's prognosis.

Standard preoperative examination [3]

- **Colonoscopy with biopsy** - if two-contrast irigography is not possible ,
- **liver sonography**

CT of the liver - in case of unclear finding or finding of liver metastases on sono,

- **CT of small pelvis,**
- **lung X-ray**

CT of the lungs - when metastases are found on X-ray
bronchoscopy – if metastases are suspected, to avoid duplication,

- **urological examination** – in case of hematuria or urological problems with suspected disease progression,
- **gynekological examination,**
- **determination of oncomarkers** – CEA, CA 19-9,
- in rectal cancer: **transrectal sonography, anorectal manometry.**

Oncological treatment

Almost every patient with CRCA undergoes oncological treatment in some of its forms - **radiotherapy , chemotherapy , biological treatment** . According to the treatment sequence, we distinguish between neoadjuvant, adjuvant and independent oncological treatment. Radiotherapy is used especially in rectal carcinoma, because it is highly sensitive to it and in addition has a high susceptibility to locoregional spread (colon carcinoma causes rather distant metastases), we apply a dose of 30 Gy.[4]

Neoadjuvant treatment

We use neoadjuvant treatment especially for rectal cancer - either radiotherapy alone or in combination with chemotherapy (ie chemoradiotherapy). In large tumors (T3 – T4, N +) during neoadjuvant (preoperative) treatment there is a **decrease in tumor mass (so-called downstaging)** , and thus better operability of the finding (higher percentage of sphincter-preserving surgery), increased percentage of curative resections and lower incidence of local recurrences . However, the overall longer survival of patients undergoing neoadjuvant therapy was not confirmed. [1] The combination of chemo- and radiotherapy is accompanied by slightly higher toxicity. In general, the indication of neoadjuvant therapy must be considered in relation to the patient's condition so that it does not significantly impair his quality of life. The chemotherapeutic of choice is **5-fluorouracil** (5-FU), alternatively **capecitabine** (p.o.), optionally in combination with **oxaliplatin** or **irinotecan** . [5] Especially in combinations such as **FOLFOX** (leucovorin, 5-FU, oxaliplatin).

Leucovorin is a biomodulator and is added to increase the effect of 5-FU and reduce toxicity.

Adjuvant treatment

If necessary after surgical treatment, systemic treatment is needed to eliminate possible micrometastases, prevent further spread of the disease or possible relapse. We decide to start adjuvant treatment again according to the patient's condition and the characteristics of the tumor. It is generally recommended especially in stage III, where it increases long-term disease-free survival by up to 30% and in stage II tumors with a high risk of recurrence. ^[1] Adjuvant chemotherapy improves 5-year survival by 10%. ^[3]

Separate oncological treatment

We use palliative separate oncological treatment in patients with inoperable advanced findings, we prolong both the median disease progression and the median survival. ^[1]

Targeted treatment

An innovation in the treatment of CRCA in the last 10 years is the introduction of targeted treatment, sometimes also referred to as biological treatment. When co-administered with chemotherapy, it increases its effectiveness (increasing the response and prolonging the median survival of patients). The principle of targeted treatment is to influence specific signaling pathways necessary for tumor growth. In the Czech Republic, three drugs are now used for targeted treatment: **bevacizumab** (antibody against vascular endothelial growth factor A - VEGF-A), **cetuximab** and **panitumumab** (epidermal growth factor receptor inhibitors - EGFR). ^[6]

Summary

General risk factors:

- less than 12 resected lymph nodes;
- low degree of tumor differentiation (grade 3 and 4);
- tumor growth through the entire intestinal wall (T4);
- perforation or obstruction of the intestine as a primary manifestation of the tumor;
- angioinvasion, lymphovascular invasion or perineural invasion;
- unknown resection margins;
- elevated level of carcinoembryonic antigen (CEA);
- mucinous component of the tumor.

Treatment strategies according to the staging of the disease at the time of diagnosis: ^[7]

St. I	surgical treatment
St. II	surgical treatment (in case of N1 NX chemotherapy is following)
St. III	surgery and always chemotherapy
St. IV	resection or induction therapy and then resection or palliative treatment.

Links

Related articles

- ws:Kolorektální karcinom/terapie
- Kolorektální karcinom
- Treatment of liver metastasis in colorectal carcinoma

External links

- Česká společnost HPB chirurgie: Návrh standardu chirurgické léčby kolorektálního karcinomu (<http://www.hpb.cz/index.php?pld=05-2-07>)

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