Case Report

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Hyperbaric Oxygenation in Recurrent Rectal Bleeding in the Background of Radiation Proctitis

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ABSTRACT Radiation proctitis is a complication of radiation therapy used in the treatment of pelvic malignant tumors. The leading clinical symptom of this kind of late radiation complications is recurrent rectal bleeding, leading to the development of anemia. Despite the availability of modern drugs, conservative treatment methods remain ineffective, and minimally invasive endoscopic technologies are not applicable in all cases and can lead to the development of complications in the form of ulcers and fistulas. About 20 years ago, the world scientific community recommended hyperbaric oxygenation (HBO) as a method of treating late radiation damage to the rectum. However, this technique has not been widely used. We have presented the experience of treating the successful use of HBO in the treatment of a 50-year-old patient with chronic radiation proctitis complicated by recurrent rectal bleeding. Conservative and endoscopic methods of treatment in this patient were ineffective. This clinical observation demonstrates that HBO is an effective method of treating rectal bleeding associated with radiation proctitis.

Keywords: radiation proctitis, hyperbaric oxygenation, rectal bleeding, argon plasma coagulation

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INTRODUCTION

Radiation proctitis is one of the most common complications in patients after radiation therapy for malignant tumors of the pelvic organs of various localization (prostate gland, cervix and body of the uterus, vagina, anal canal, urethra, etc.) [1].

Chronic radiation proctitis occurs three months after radiation therapy. Its main clinical symptoms are as follows: discharge of blood from the rectum, frequent urge to defecate and pain in the rectal area. Rectal bleeding against the background of radiation proctitis has a chronic recurrent nature of the course and often leads to the development of severe anemia [2]. Conservative methods of treatment in the form of rectal and oral administration of drugs of the 5-aminosalicylic acid group, glucocorticosteroids, enemas with sucralfate, short-chain fatty acids, vitamins E and C are ineffective in most cases. In the moderate course of chronic radiation proctitis, endoscopic technologies are used in the form of argon plasma coagulation and radiofrequency ablation, which may require staged treatment, have the risk of developing ulcers and perforation of the rectum. Patients with a severe course of chronic radiation proctitis urgently require surgical treatment in the amount of the formation of a disabling stoma or resection interventions, which drastically reduce the quality of life of these patients [3, 4].

In 2001, at a joint conference of the European Committee for Hyperbaric Medicine and the Radiotherapy Oncology Group of the European Organization for Research and Treatment of Cancer, recommendations were approved for the use of hyperbaric oxygen in the treatment of late radiation injuries, including radiation proctitis [3, 4]. However, in Russia this method of treatment for this category of patients has not been widely used [3].

The presented clinical observation demonstrates the successful experience of using hyperbaric oxygen therapy in a patient with severe radiation proctitis, resistant to conservative and endoscopic methods of treatment.

Case report

Woman patient A., aged 50, applied to the Moscow Scientific Center named after A.S. Loginov with complaints of bleeding from the rectum during defecation. From the anamnesis it is known that in June 2019 a clinical diagnosis of stage I cervical cancer was made. In this connection, on August 12, 2019, laparoscopic extirpation of the uterus with appendages was carried out. According to the histological examination of the surgical material, the tumor was represented by an invasive moderately differentiated squamous cell carcinoma with invasion into the thickness of no more than 5 mm. The postoperative period proceeded smoothly. On the 6th day after the operation, the patient was discharged from the hospital in a satisfactory condition.

Then the patient was discussed at a multidisciplinary oncological council, radiation therapy was recommended. From September 6 to October 24, 2019, 11 radiation therapy sessions were carried out according to the radical program, remotely in the statistical mode with two open opposing fields of figured shape with a lower border in the middle of the womb and contact on the Microselectron device. The total dose of radiation therapy was 46 Gy for the regional lymphatic outflow and 67 Gy for the vaginal stump. During radiotherapy, no clinically significant radiation reactions were detected in the patient.

The patient was under the supervision of an oncologist at the place of residence. Six months after the end of the combined treatment, the patient noted the discharge of dark blood from the rectum during defecation up to 4-5 times a day. По поводу чего была обследована амбулаторно. Data for recurrence and progression of cervical cancer have not been identified. However, colonoscopy revealed multiple submucosal telangiectasias with eroded mucosa and contact bleeding in the rectum. After consultation with a coloproctologist, on the basis of the examination, a clinical diagnosis was established: "Late radiation damage to the rectum in the form of radiation proctitis". Within one month, the patient received conservative therapy: Mesalazine 3 grams per day per os, Budenofalk 2 milligrams rectally. Despite the treatment, the excretion of blood from the rectum progressively increased. The patient daily had multiple stools up to 5-6 times with blood clots. The patient was hospitalized twice in emergency hospitals with rectal bleeding complicated by severe posthemorrhagic anemia (hemoglobin 56 g/l) against the background of chronic radiation proctitis. The patient underwent hemostatic therapy and transfusion of blood components with a temporary effect, in the form of a decrease in the release of blood from the rectum. Due to the ineffectiveness of conservative therapy, the patient turned to the Moscow Scientific Center named after A.S. Loginov. With endovideorectoscopy, multiple confluent telangiectasias about 1 cm in size were determined along the anterior semicircle of the rectum. Marked bleeding of the rectal mucosa was noted. This endoscopic picture of changes in the rectal mucosa was regarded as grade 3 radiation proctitis according to the

endoscopic scale for the density of rectal telangiectasias (Fig. 1). In order to exclude inflammatory bowel disease, the patient underwent a biopsy of the rectal mucosa. According to histologic examination morphological changes corresponded to chronic radiation proctitis. In the mucosa, the surface epithelium was partially absent, sclerosis of the lamina propria with a pronounced proliferation of collagen fibers was noted. Lymphovenous infiltration and expansion of capillary vessels were also revealeded (Fig. 2).

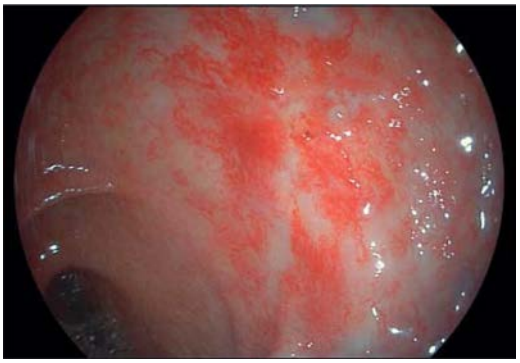

Fig. 1. Endoscopic picture of altered rectal mucosa

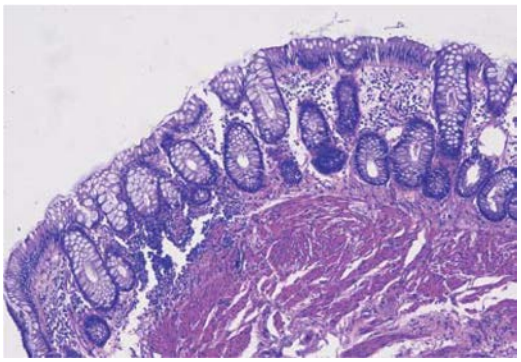

Fig. 2. Morphological picture of changes in the rectal mucosa

The patient urgently underwent argon plasma coagulation (APC) of the altered areas of the rectal mucosa in the Precise mode with an effect of 4. Послеоперационный период протекал без особенностей. After the operation, the patient noted a positive trend in the form of a significant decrease in the release of blood from the rectum. The stools was up to 2-3 times a day, periodically with a slight admixture of blood. During the control rectoscopy 30 days after the operation, positive dynamics was noted in the form of a decrease in the number of telangiectosis of the rectal mucosa (Fig. 3). However, on the 43rd day after the operation, the patient noted an abundant discharge of blood from the rectum. In this connection, the urgently rectoscopy was performed. According to rectoscopy data there was noted swelling and infiltration of the rectal mucosa, severe bleeding of tissues (Fig. 4).

Fig. 3. Endoscopic picture of the rectal mucosa 30 days after APC

Однако на 43-и сутки после операции больная отметила обильное выделение крови из прямой кишки. В связи с чем в срочном порядке пациентке была выполнена ректоскопия, по данным которой отмечался отек и инфильтрация слизистой прямой кишки, выраженная кровоточивость тканей (рис. 4).

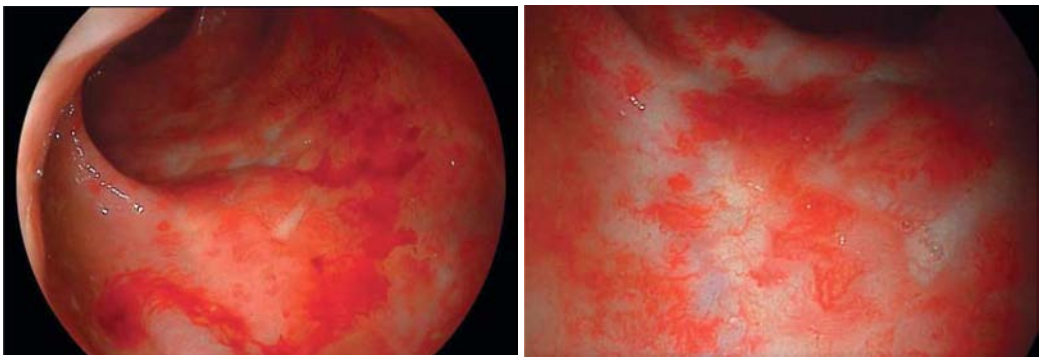

Fig. 4. Endoscopic picture of the rectal mucosa 43 days after APC

Considering the ineffectiveness of conservative therapy and endoscopic methods of treatment, it was decided to refer the patient to hyperbaric oxygen therapy. In the Sklifosovsky Research Institute for Emergency Medicine, the patient underwent 30 sessions of hyperbaric oxygenation daily at a pressure of 1.5 ATA for 60 minutes. Against the background of hyperbaric oxygen therapy, the patient noted an improvement in well-being, mood, reduced fatigue, and better exercise tolerance. The patient tolerated the baroseans well, noted a pronounced positive trend in the form of a complete cessation of blood from their rectum during defecation, a decrease in the frequency of stools to 1 time per day. During control rectoscopy after 30 sessions of hyperbaric oxygenation, there was noted a complete absence of edema and infiltration of the rectal mucosa, a significant decrease in the size and number of telangiectosis (Fig. 5). The patient was followed up for three months. After the end of hyperbaric oxygen therapy, there were no clinical and endoscopic data for the recurrence of radiation proctitis.

Fig. 5. Endoscopic picture of the rectal mucosa after 30 HBO sessions

DISCUSSION

Despite the use of modern radiation units and methods of targeted contouring in radiation therapy for pelvic cancer, the incidence of late complications remains high. Chronic radiation proctitis of varying severity is the most common complication and occurs in approximately 20% of patients [5, 6, 7]. Given the pathogenetic features of the occurrence of radiation proctitis, there are no etiotropic methods of treatment. Conservative methods of treatment are often improvised and ineffective [6]. Endoscopic technologies used to destroy telangiectosis require staged treatment and may not be used in all patients.

Hyperbaric oxygen therapy is an alternative treatment for patients with chronic radiation proctitis. However, due to the reorganization of the departments of hyperbaric oxygenation in many hospitals, the use of this method of treatment remains inaccessible [7, 8].

The inclusion of hyperbaric oxygen in the standard therapy in the treatment of patients with chronic radiation proctitis causes concern for many clinicians due to the possible recurrence and progression of the underlying tumor process. However, a few clinical studies and experiments on laboratory animals have not shown a negative effect of hyperbaric oxygen therapy on the course of a malignant tumor [9, 10, 11, 12]. Known studies demonstrate retardation of growth and progression of the tumor process [13, 14, 15, 16].

CONCLUSION

This clinical observation demonstrates that hyperbaric oxygen therapy is an effective treatment for patients with severe chronic radiation proctitis. However, in order to assess the duration of the effect of hyperbaric oxygen therapy, as well as its oncological safety, randomized trials with a large sample of patients are required. This clinical observation demonstrates that hyperbaric oxygen therapy is an effective treatment for patients with severe chronic radiation proctitis. However, in order to assess the duration of the effect of hyperbaric oxygen therapy, as well as its oncological safety, randomized trials with a large sample of patients are required.

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