Case Report

Autoamputation of rectum as a result of neoadjuvant radiotherapy: a case report

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Abstract

Total mesorectal excision and neoadjuvant radiotherapy have been known to reduce the local recurrence in advanced rectal carcinoma. Radiotherapy still exerts harmful side effects in spite of several advancements over the years. Bowels are most commonly affected organs. In some rare cases, rectum, colon and small bowel perforation, and septic complications have been reported in the course of, or after, neoadjuvant radiotherapy. We report here a case of rectal autoamputation due to the side effect of neoadjuvant radiotherapy.

KEY WORDS: Radiation, autoamputation, neoadjuvant radiotherapy

Introduction

Neoadjuvant radiotherapy for locally advanced rectal cancer was widely used in the past two decades.[1] Despite optimization of treatment dosage, new techniques, and various types of equipment, radiotherapy (RT) still exerts acute and long-term side effects. We report here a case of rectal autoamputation due to the side effect of neoadjuvant radiotherapy.

Case Report

A 40-year-old man presented with an 8-cm stenotic rectal mass at the verge of anus. Diagnosis was confirmed by biopsies, and the tumor was described as adenocarcinoma. The patient was evaluated with CT scan and magnetic resonance imaging (MRI), and a locally advanced (T3) tumor was found [Figure 1]. After admission and diagnosis, a large bowel obstruction developed in the patient. A sigmoid loop colostomy was applied to decompress the large bowel. Before the last admission, long-course neoadjuvant radiotherapy (45 Gy in 28 fractions) and infusion of 5FU was carried out. Four weeks after completion of neoadjuvant chemoradiotherapy, the patient was hospitalized for radical rectal resection. At laparatomy, rectosigmoid junction was easily separated from pelvic peritoneum after minimal manipulation of the sigmoid colon. Proximal 2/3 rectum was absent and pelvic space was filled with necrotic tumoral tissue, fibrin, and purulent material. Abdominoperineal resection was applied for clearance of the pelvic space. Abdominal distention and pain were developed in the patient 1 week after the surgery. A large pelvic abscess was diagnosed with CT scan. Percutaneous drainage of the abscess was carried out and intravenous antibiotic therapy was administered. The patient was discharged on postoperative day 25.

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Discussion

The importance of preoperative radiotherapy in preventing local recurrence and improving survival has been shown for locally advanced rectal cancer.[1] Acute, chronic, and life-threatening side effects of adjuvant and neoadjuvant radiotherapy were revealed.[2,3] Before the neoadjuvant therapy of rectal cancers, radiation injury of rectum resulted from adjuvant therapy of gynecologic and urologic malignancies. Diarrhea, tenesmus, and rectal bleeding are the symptoms of early rectal injury. Stricture, proctitis, fistulous connections, diminished rectal compliance, decreasing storage capacity with resultant small bowel movements and perforations are late complications of injury that are usually clinically manifested within 3–4 years after RT.[2] Neoadjuvant radiotherapy increases the rate of postoperative perineal wound infection, thromboembolic events, and femoral and pelvic fractures, but there is no deterioration of anastomotic healing.[4]

Rectal bleeding is usually self-limiting, although some patients require medical management with anti-inflammatory suppositories, antibiotics, endoscopic coagulative therapies, or rarely, surgical diversion. In patients with endoscopic rectal

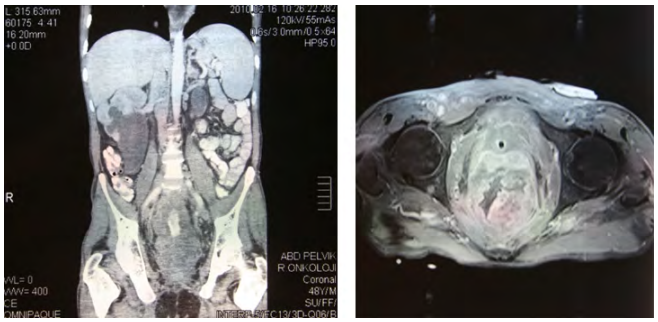

Figure 1: The view of coronary and sagittal plane in an MRI examination.

abnormalities after RT, the most likely diagnosis is the effect of RT, and biopsy should not be performed because this may lead to chronic infection, poor healing, or ulceration.[5]

Radiation Therapy Oncology Group (RTOG) scoring criteria are commonly used to report toxicity. The original system was criticized as being vague, nonquantitative, and unvalidated. The most frequent endpoints considered in the published analyses are either rectal bleeding or RTOG Grade ≥2 late rectal toxicity. Grade 2 RTOG toxicity includes moderate diarrhea and colic, bowel movement more than five a day, excessive rectal mucus, or intermittent bleeding. Grade 3 RTOG consists of obstruction or bleeding requiring surgery. Grade 4 RTOG (necrosis/perforation fistula) is rarely encountered in current practice.[5] In our case, Grade 4 rectal toxicity was established.

In some rare cases, rectal, colonic, and small bowel perforation and septic complications have been reported in the course of, or after, neoadjuvant radiotherapy.[1,6,7] Most dose–volume parameters significantly associated with late rectal toxicity consider doses ≥60 Gy. Though, with a few exceptions, V_{dose} has not been found to be significantly associated with difference in rectal toxicity for doses ≤45 Gy,[5] as in our case, neoadjuvant radiotherapy (45 Gy in 28 fractions) caused rectal autoamputation. In our opinion, it is due to the long course of RT.

"This complication may cause abscess, peritoneal sepsis, and even death." In our patient, the effect of RT was different than that observed in the previous cases. The side effects of neoadjuvant therapy were tumor lysis and autoamputation of the rectum. Pelvic space of patient became a cavity containing necrotic tumoral tissues and fibrosis. This life-threatening complication was related to locally advanced tumor necrosis and rectal wall lysis. Large, bulky, and fixed tumors may have a tendency to perforate after RT.

In our clinic, neoadjuvant chemoradiotherapy had been used for T3 rectal cancers but we did not observe rectal or colonic perforation before.

In the course of aggressive and locally advanced tumor, spontaneous tumor perforation may occur. The most imporfactor is the dose of radiation administered in neoadjuvant therapy to prevent this complication. In the literature, short-course regime (25Gy in five fractions) has been shown to avoid the tumor necrosis and subsequent perforation than the long-course regime.[1] But there was not any study evaluating the safety of short-course RT.

Conclusion

Neoadjuvant radiotherapy is a valuable technique to prevent local recurrence and is used to improve survival in locally advanced rectal tumors. However, this therapy has also potential life-threatening side effects such as rectal or tumor perforation. Patients have to be informed beforehand, and surgeons should be aware of potential complications after the therapy. Large, bulky, and fixed tumors may have a predisposition to perforate after RT.

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