



Case Report

Rectal Fistula Causing NSTI of the Right Gluteal Region and Thigh after Colonoscopy

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Abstract

Necrotizing soft-tissue infections (NSTI) are severe and rapidly progressing bacterial infections that carry high mortality. We are presenting a unique case of NSTI following colonoscopy associated with rectal carcinoma in a man on his mid-60s who noticed swelling and pain in his right lower extremity four days following a colonoscopy. The patient was diagnosed with NSTI and underwent surgical debridement. Three days after surgical intervention, the colonoscopy report returned confirming rectal cancer, which may have contributed to NSTI development. This case highlights a rare but serious complication following colonoscopy, emphasizing the need for clinicians to consider NSTI in patients with malignancy and immunocompromised conditions who present with signs of sepsis and soft-tissue infection after endoscopic procedures.

Keywords: Rectal Fistula, NSTI, Colonoscopy, Gluteal Region, Thigh, Case Report

Introduction

Necrotizing soft-tissue infections (NSTI) are severe and potentially life-threatening bacterial infections. Bacteria can spread through the tissue, releasing destructive toxins that lead to the development of deep ulcers, abscesses, and tissue necrosis.¹ The infection can spread rapidly, leading to sepsis and high mortality rates averaging 25%.² NSTI may occur due to a variety of procedures such as intramuscular injection, gastrostomy tube insertion, percutaneous coronary revascularization, endoscopy and hemorrhoidectomy.³ In this paper, we describe a rare case of NSTI developing after a colonoscopy associated with rectal cancer.

Case Description

A male in his mid-60s with a medical history of type 2 diabetes mellitus (DM) presented to

the emergency department with complaints of swelling and tenderness in his right lower extremity four days after undergoing colonoscopy and rectal mass biopsy. He had no prior history of trauma or surgery. The colonoscopy report revealed a large circumferential mass spanning from 4 cm to 10 cm from the anal verge. A biopsy of the rectal mass was performed (Figure 1). Upon physical examination, his right lower extremity was warm, erythematous, and firm to touch; the affected area extended from the right mid-gluteal region to just above the posterior right knee. The patient was hypotensive with a blood pressure of 89/59. Laboratory data obtained in the emergency department indicated severe infection and

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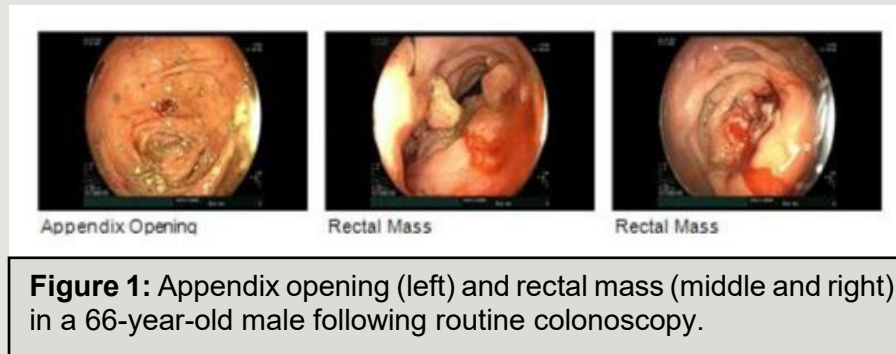


Figure 1: Appendix opening (left) and rectal mass (middle and right) in a 66-year-old male following routine colonoscopy.

was notable for a white blood cell count of 28,000/mm³ (reference range, 4,000–10,000/mm³). The rest of the laboratory results were as follows: blood urea nitrogen level, 8 mg/dL (8–20 mg/dL); hemoglobin 9.8 g/dL (13.7–17.5 g/dL); sodium 136 mmol/L (136–145 mmol/L); creatinine, 0.49 mg/dL (0.7–1.2 mg/dL); lactic acid, 7.8 mmol/L (0.5–2.0 mmol/L); glucose, 112 mg/dL (74–106 mg/dL); hemoglobin A1C 6.4 % (3.8–5.6 %); and total bilirubin, 0.7 mg/dL (0.3–1.2 mg/dL). The patient's Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score was calculated to be 6, indicating a moderate risk for necrotizing fasciitis. He was started on a course of intravenous (IV) clindamycin and piperacillin-tazobactam as empiric treatment for NSTI while cultures were collected and submitted for gram-stain and culture. Three days after admission, blood cultures were positive for *Pseudomonas* sp., and the patient was continued on IV piperacillin-tazobactam per sensitivity report.

Upon admission, computed tomography (CT) of the right lower extremity with contrast showed a 32 cm multiloculated collection of fluid and gas from the gluteal musculature along the lateral musculature of the right thigh consistent with an abscess (Figure 2). Additional subcutaneous gas was noted in the anterior and medial aspect of the distal thigh, concerning for necrotizing fasciitis. CT of the abdomen and pelvis showed irregular wall thickening of the distal sigmoid colon with possible fistula.

Due to the high level of suspicion for NSTI, urgent surgical intervention was required. The patient was immediately taken to the operating room for incision and drainage of the right thigh abscess, and excisional debridement of the right gluteal and thigh. The total area of skin and subcutaneous tissue found to be involved by NSTI measured 40 cm x 12 cm x 12 cm which was adequately debrided (Figure 3). Once infection controlled with daily wound dressing change, a vacuum-assisted closure (VAC) device was applied over the open wound.

Three days after the surgical debridement of NSTI, the patient's colonoscopy returned with report of moderately differentiated rectal adenocarcinoma. Additionally, Gastrografin enema showed a marked area of annular constriction measuring 6 cm along the rectosigmoid region proximally with the edema (Figure 4). A fistula was found along the right lateral wall of the proximal rectosigmoid extending along the right acetabulum into the right hip joint, suggestive of colorectal carcinoma. Carcinoembryonic antigen (CEA) levels were measured at 8 ng/mL (0.0–3.0 ng/mL). The next day, the patient underwent a diverting colostomy. The patient showed improvement and gradual wound healing over the next six days in the surgical intensive care unit (SICU). He was then transferred to a long-term acute care (LTAC) hospital for direct physician supervision, local wound care, and to finish a course of IV



Figure 2: CT of the right lower extremity shows subcutaneous air in the gluteal musculature extending into the distal thigh.

antibiotics. After 34 days of care at the LTAC, the patient was transferred to inpatient rehabilitation and directed to follow-up in four weeks for the final staging of rectal cancer. After a multidisciplinary discussion, it was discussed that the patient will benefit from neoadjuvant therapy, which consists of an extended course of chemotherapy and radiation treatment.

Discussion

NSTI is often difficult to distinguish from cellulitis upon physical exam and the index of clinical suspicion must be high to quickly and accurately diagnose NSTI. Signs and symptoms may include fever, tachycardia, hypotension, shock, swelling, erythema, pain disproportionate to appearance, skin discoloration, crepitus, and subcutaneous gas.⁴ The Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score was developed to help differentiate NSTI from other soft tissue infections. This score is based on a CRP > 150 mg/L, WBC > 15,000/mm³, Hemoglobin > 13.5 g/dL, Na < 135 mEq/L, creatinine > 1.6 umol/L, and glucose > 180 mg/dL.⁵ Recent studies have shown that the LRINEC score is a poor predictive factor of NSTI.⁶ If the diagnosis of NSTI is uncertain but the suspicion is high,



Figure 3: Post-Debridement surgical site on the right thigh for NSTI treatment.

the gold standard is surgical exploration which is both diagnostic and therapeutic.

NSTI can be categorized based on the microbiology of the infection and divided into four categories: polymicrobial (type I); monomicrobial caused by *Staphylococcus aureus* (type II); monomicrobial caused by clostridium species, gram-negative bacteria, or *Vibrio* species (type III); and fungal infection (type IV).¹ In our case, the presence of gas in soft tissues on radiographic imaging indicates the NSTI is more likely to be type I or III.

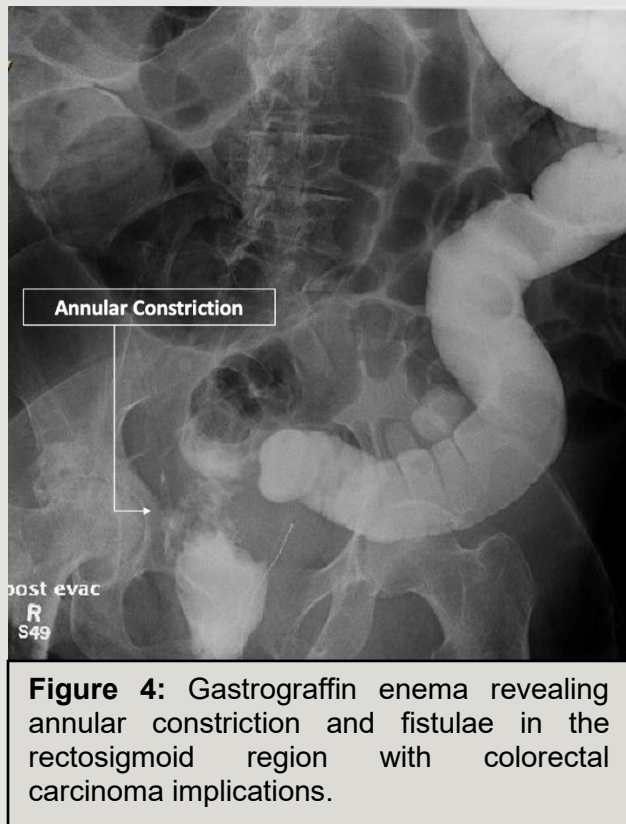


Figure 4: Gastrograffin enema revealing annular constriction and fistulae in the rectosigmoid region with colorectal carcinoma implications.

Risk factors for NSTI include a depressed immune system or decreased tissue perfusion caused by DM, malnutrition, IV drug use, obesity, chronic alcohol abuse, leukemia, steroid use, renal failure, peripheral artery disease, or cirrhosis.⁵ Those with NSTI and underlying DM were reported to have higher mortality and polymicrobial infection rates.² Our patient may have had an exacerbated clinical course because of comorbidity of DM and weakened immune system from underlying malignancy.

The development of NSTI associated with colonoscopy or rectal cancer is not commonly reported in the literature. Fistulae may be a complication of conditions such as colorectal cancer and can provide a pathway for bacteria to enter the body and cause a necrotizing infection. A retrospective cohort study on subjects presenting with NSTIs

found that the GI fistulae facilitated continuous chemical irritation, compromised skin integrity, and exacerbated the spread of infection.⁷

The patient might have an underlying fistula that could have caused the NSTI, which the colonoscopy might exacerbate (Figure 5). Endoscopists must be aware of this possible complication to warn the patient to seek medical attention if unusual signs and symptoms occur after the procedure.

Conclusion

NSTI may develop after a colonoscopy, especially in elderly patients with DM and/or underlying malignancy. Early diagnosis, appropriate treatment, and source control of sepsis are the mainstays in managing NSTI. Clinicians should consider NSTI as a potential diagnosis in patients presenting with unexplained sepsis, pain, and tenderness following a colonoscopy. Additionally, it is important to be aware of possible underlying colonic or rectal malignancies that may weaken the immune

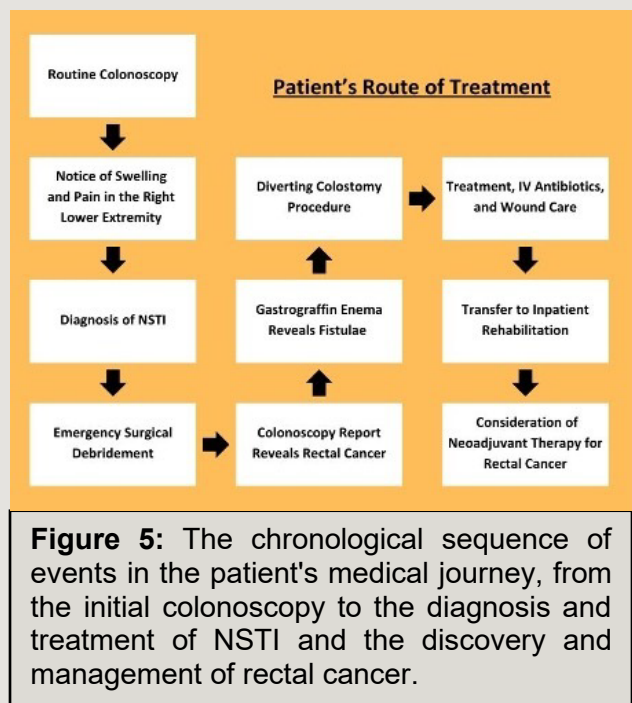


Figure 5: The chronological sequence of events in the patient's medical journey, from the initial colonoscopy to the diagnosis and treatment of NSTI and the discovery and management of rectal cancer.

system, leading to fistula formation and further exacerbating NSTI.

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