





Case Report

High-Dose Radiation-Induced Bowel Perforation Leading to Thigh Necrotizing Fasciitis in a Cervical Cancer Case: A Case Report

Serviks Kanseri Olgusunda Yüksek Doz Radyasyona Bağlı Baırsak Perforasyonun Neden Olduğu Uyluk Nekrotizan Fasiiti: Bir Olgu Sunumu

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ABSTRACT

Necrotizing fasciitis is a rare, life-threatening soft tissue infection that is infrequently associated with sigmoid colon perforation, particularly following high-dose radiation therapy (RT) for cervical cancer. This case report presents a 58-year-old female patient with advanced cervical cancer treated with RT. She presented with general deterioration and left lumbar pain. Imaging studies revealed gas in the left hip and thigh, and extraluminal leakage suggestive of bowel perforation. Emergency laparotomy and surgical debridement confirmed a sigmoid colon perforation with stool contamination extending into the thigh. Despite aggressive interventions, including partial colon resection and fasciotomy, the patient succumbed to sepsis and multi-organ failure within 24 hours. This case highlights the rare but serious complication of necrotizing fasciitis secondary to radiation-induced sigmoid colon perforation, emphasizing the importance of early diagnosis and timely intervention.

Keywords: Radiation therapy, sigmoid perforation, necrotizing fasciitis

ÖZ

Nekrotizan fasiit, nadir görülen ve yaşamı tehdit eden bir yumuşak doku enfeksiyonudur. Özellikle serviks kanseri nedeniyle yüksek doz radyoterapi (RT) sonrası sigmoid kolon perforasyonu ile ilişkilendirilmesi oldukça nadirdir. Bu olgu sunumunda, ileri evre serviks kanseri nedeniyle RT uygulanan 58 yaşındaki bir kadın hasta ele alınmıştır. Hasta, genel durum bozukluğu ve sol lomber bölgede ağrı şikayetleriyle başvurmuş, görüntüleme çalışmaları sol kalça ve uylukta gaz varlığını ve bağırsak perforasyonunu düşündüren sızıntıyı ortaya koymuştur. Acil laparotomi ve cerrahi debridman sırasında sigmoid kolon perforasyonu ve dışkı kontaminasyonu doğrulanmıştır. Parsiyel kolon rezeksiyonu ve fasiotomi gibi agresif müdahalelere rağmen hasta, sepsis ve çoklu organ yetmezliği nedeniyle kaybedilmiştir. Bu olgu, radyasyon kaynaklı sigmoid kolon perforasyonuna bağlı nekrotizan fasiitin nadir ancak ciddi bir komplikasyonunu vurgulamaktadır ve erken tanı ile zamanında müdahalenin önemini göstermektedir.

Anahtar Kelimeler: Radyoterapi, sigmoid perforasyon, nekrotizan fasiit

INTRODUCTION

Necrotizing fasciitis is a rapidly progressive and often fatal soft tissue infection that involves the necrosis of subcutaneous tissues. It can be caused by various factors, with immunosuppression observed in only 0.2% of cases (1). Cervical cancer ranks as the second most frequent

gynecological cancer in women worldwide. Radiation therapy (RT) has been widely used to treat cervical cancer over the past hundred years and remains the primary treatment option, especially for locally advanced disease (2). Sigmoid colon perforation is one of the most frequently reported complications of RT (3). There are case reports in the literature, describing thigh necrotizing fasciitis

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associated with sigmoid colon perforation secondary to colon cancers and diverticulitis (4). However, to the best of our knowledge, there are no case reports of thigh necrotizing fasciitis secondary to sigmoid colon perforation resulting from high-dose RT for cervical cancer, making our case unique.

CASE REPORT

Informed consent for the case report was obtained from the patient's legal representatives.

A 58-year-old female patient presented to the emergency room with general malaise. She had no history of trauma but reported pain in the left lumbar region for approximately 45 days. A lumbar disc hernia had been diagnosed at another hospital, and physical therapy had been initiated. The patient reported that she had been unable to walk for the past 15 days due to pain and swelling in the left thigh, which had also prevented her from continuing physical therapy. Her general condition had deteriorated in recent days, leading to her admission to the emergency room.

Physical examination revealed tenderness in both lower quadrants of the abdomen, extensive edema, redness, and crepitation, upon palpation in the left lower extremity, extending to the ankle. Upon arrival, the patient's blood pressure was 80/50 mmHg, heart rate was 102/minute, temperature was 38.2 °C, and pulse oximetry was 92%. Laboratory results showed a white blood cell count of $8.56 \times 10^9/L$, a creatinine 1.3 mg/dL, a hemoglobin 8 g/dL, a C-reactive protein 33 mg/dL, and a serum lactate 2.5 mmol/L.

Direct radiographs and computed tomography (CT) scans of the abdomen, pelvis, and lower extremities demonstrated the presence of gas in tissues consistent with necrotizing fasciitis, extending from the left iliac fossa, left hip, and left thigh down to the left ankle (Figure 1A-C). Coronal pelvic CT sections revealed abnormal air within the iliac fossa (Figure 1C). Contrast-enhanced CT in the sagittal plane showed the possible progression of a mass or abnormality originating in the iliac fossa, likely following the course of the iliopsoas muscle through the inguinal canal into the thigh compartments (Figure 1D). Additionally, axial CT sections showed widespread contrast material and a large air-fluid level within the iliac fossa (Figure 1E).

Considering necrotizing fasciitis of the left lower extremity secondary to bowel perforation, the patient underwent emergency surgery in collaboration with the general surgery team. Emergency laparotomy revealed that the sigmoid colon was adhering to the posterior abdominal

wall and had perforated through this wall. An abscess was present in the retroperitoneum, and palpation of the thigh indicated stool drainage from the abdomen into the thigh. Following debridement, partial colon resection, and colostomy were performed. Fasciotomy was then performed with four incisions, on the medial and lateral sides of the thigh and leg. Extensive stool was found in the thigh (Figure 2A-B), reaching the knee and predominantly in the anterior compartment. Aggressive debridement was performed. Due to the patient's clinical deterioration, treatment, including inotropic support, was initiated in the intensive care unit. Unfortunately, the patient's lactic acidosis continued to worsen, and she died 24 hours later from sepsis and multi-organ failure.

DISCUSSION

Necrotizing fasciitis is a rapidly progressing and life-threatening infection that spreads along fascial planes in soft tissues (5). Early recognition of the disease and prompt initiation of emergency surgical debridement, along with broad-spectrum antibiotic therapy, can reduce mortality rates from 70% to 20% (6,7). Necrotizing fasciitis secondary to gastrointestinal tract perforation outside the perineum is very rare, it is often overlooked, diagnosed in the late stages, and generally has a fatal outcome (8).

RT uses high-energy beams or radioactive materials to target rapidly dividing cells with ionizing radiation. One of the most common complications of RT is radiation proctitis, which results from secondary damage to the rectal epithelium by ionizing radiation (9). Although RT does not directly cause necrotizing fasciitis, radiation applied to the abdominal area can cause epithelial damage to the bowel wall and lead to bowel perforations over time. These perforations, though rare, may result in the drainage of bowel contents into the peritoneal cavity, subsequently causing infection and necrotizing fasciitis in the affected extremity (10). Cases of thigh necrotizing fasciitis due to direct bowel perforations, independent of RT, have also been reported in the literature (8). In atypical presentations where other underlying causes are more prominent in the clinical history and the clinical features of necrotizing fasciitis are less apparent, diagnostic delays may occur, leading to increased morbidity and mortality.

Our case of thigh necrotizing fasciitis secondary to sigmoid colon perforation following high-dose RT for cervical cancer presents a rare but severe clinical scenario. This case, along with others described in the literature, demonstrates that necrotizing fasciitis can manifest with non-specific symptoms, leading to diagnostic delays. In this instance, the

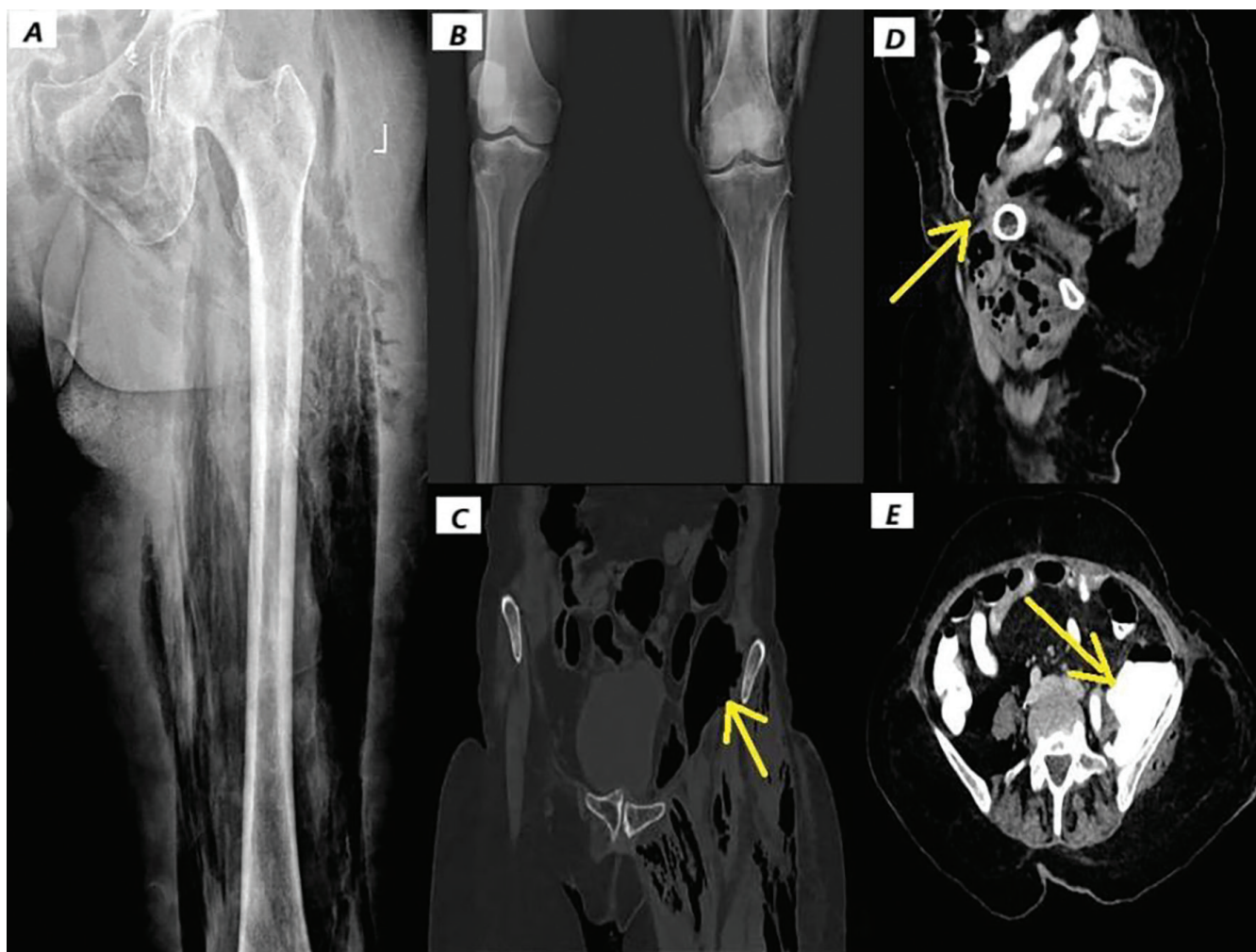


Figure 1. (A) A 58-year-old female patient anteroposterior pelvis and femur X-ray, abnormal gas pattern in the tissues overlying in the left hip and left thigh. (B) Abnormal gas pattern extended to the left cruris and ankle. (C) Abnormal gas pattern in the left iliac fossa on the coronal CT view. (D) The collection areas extended from the paravertebral area to the left inguinal canal on sagittal CT view. (E) Extralumination of the contrast agent into the iliac fossa on axial CT view

CT; Computed tomography

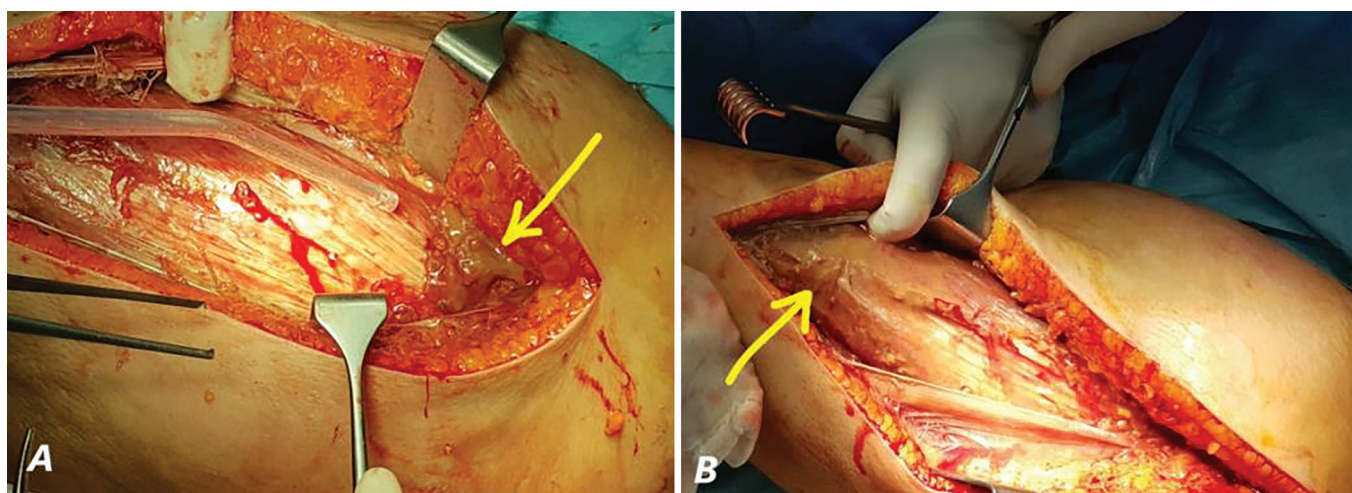


Figure 2. (A) Drainage of stool from the proximal area visualized after an extended lateral incision of the thigh. (B) Presence of stool draining down to the distal thigh and contaminating the thigh compartments

initial misdiagnosis of back pain as lumbar disc herniation, combined with the absence of any clinical history or findings related to bowel issues, delayed the recognition of bowel perforation and subsequent thigh necrotizing fasciitis. This delay contributed to the fatal progression of the disease.

These findings underscore the critical importance of maintaining a high index of suspicion for serious underlying causes in patients presenting with atypical or non-specific symptoms (11-13). Special caution is warranted in patients with a history of abdominal RT, as the long-term risk of bowel perforation and subsequent complications remains significant.

CONCLUSION

Aggressive surgical debridement remains the cornerstone of treatment for necrotizing fasciitis. Our case, along with others, highlights the necessity of timely surgical intervention to remove infected tissue and control the spread of infection (11,12). In cases where the infection spreads to the thigh through anatomical pathways, additional procedures such as colostomy may be required to manage fecal contamination and facilitate wound healing. Aggressive debridement is life-saving in necrotizing fasciitis. Subsequently, repeated debridements, negative pressure wound therapy, and in advanced cases, amputation may be effective in managing complex soft tissue infections and supporting recovery (11-15).

ETHICS

Informed Consent: Informed consent for the case report was obtained from the patient's legal representatives.

FOOTNOTES

Authorship Contributions

Surgical and Medical Practices: V.Ö., M.Y., Concept: V.Ö., Design: M.Y., Data Collection or Processing: M.Y., Analysis or Interpretation: V.Ö., Literature Search: V.Ö., M.Y., Writing: V.Ö., M.Y.

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