

Abdominal Wall Non-Clostridian Gas Cellulitis: a Rare Complication of a Colostoma

A. Maier, L. Boieriu

Surgery Department II, Emergency Clinical County Hospital, Braşov, Romania

Rezumat

Celulita crepitantă neclostridiană a peretelui abdominal - complicația rară a unei colostomii

Autorii prezintă cazul unui pacient de 69 de ani, obez, care are un anus iliac stâng efectuat pentru un neoplasm rectal (în urmă cu 12 ani) și care dezvoltă o celulită crepitantă neclostridiană a peretelui abdominal, ca urmare a perforației traumatice intraparietale a ansei colice. Prezența herniei peristomale a favorizat leziunea posttraumatică a ansei colice. Intervențiile chirurgicale repetate, alături de tratamentul antibiotic au determinat o evoluție favorabilă. Nu a fost necesară derivarea tranzitului intestinal în ciuda contaminării plăgii cu materii fecale. Sunt prezentate aspecte clinice și terapeutice ale infecțiilor peretelui abdominal.

Cuvinte cheie: celulită, colostomă, perete abdominal, traumatism

Abstract

The authors report the case of a 69 year-old patient, with obesity, having a left colostomy that has been made for rectal cancer (12 years ago) and who developed a non-clostridian gas cellulitis of the abdominal wall as a result of intraparietal

traumatic tract perforation of the colostomy. The presence of the peristomal hernia favoured the posttraumatic injury of the colostomy. Repeated surgical interventions and the antibiotic treatment determined a favourable evolution. Despite the wound contamination with excrement, transit stoma relocation was not necessary. Some clinical and therapeutic aspects of abdominal wall infections are presented.

Key words: cellulitis, colostomy, abdominal wall, trauma

Introduction

Continuing interest in suppurations and suppurated wounds is given by the fact that their treatment requires extensive human and material resources (1). Non-clostridian gas cellulitis (or phlegmon gas) is a putrid infection of the subcutaneous tissue, with gas formation, which can complicate the development of postoperative or traumatic wounds. Most frequently, these infections occur after interventions on the digestive or genitourinary tract, and the etiology is mixed, namely: aerobic bacteria associated with strict or facultative anaerobes (2,3). Unlike other non-suppurating infections of the subcutaneous tissue, where surgical treatment is totally contraindicated, in the case of clostridium crackling cellulite (gas gangrene) and non-clostridian gas cellulitis, surgical treatment is fundamental (4). Although the abdominal wall infection related to colostomy is highlighted by many authors, it is not always cited as its most common complication (5, 6, 7). Factors influencing the development of this infection are: earliness and accuracy of the surgical intervention, old age, associated comorbidities (2,3,4).

Corresponding author:

Dr. Adrian Maier
Surgery Department II
Emergency Clinical County Hospital
25-27, Calea Bucureşti Street, Braşov, Romania
E-mail: dradimaier@yahoo.com

Case presentation

The patient named B.N., aged 69, from an urban area, known to have terminal left colostomy, effectuated approximately 12 years ago for rectal cancer (undocumented), for which post-operative radiotherapy was performed as well, is admitted to the emergency room (FO 12805 / 04.05.11) for a limited-area skin necrosis in the left lower abdominal quadrant (below the left colostomy), with swelling, redness, local heat and pain, delayed transit stoma, nausea, vomiting, and impaired general condition. The patient admits suffering an injury in the left lower abdominal quadrant, produced by a ram through a horn blow, 10 days before admission. Approximately 2 days before admission he performed a colostomy (?) enema evacuation, without obtaining any results.

Physical examination on admission reveals an obese patient (1st degree obesity), feverish, with moderately impaired general condition, stable from hemodynamic and respiratory points of view. He presents, in the left lower abdominal quadrant, an uncomplicated peristomal hernia, erythema and edema of the skin area exceeding the median line; at about 3 cm below the left colostomy, the patient presents a circular area of skin necrosis (the size of a 50 Ban coin*equivalent to a 2 Euro coin size), fluctuating, with fine crepitation on palpation. The colic mucosa from the colostomy is prolapsed and presents important edema, hyperemia and mucous secretion. Emergency examination highlights: leucocytosis ($L = 15820 / \mu L$) with neutrophilia (90.8%), elevated ESR (70 mm/hour), slight nitrogen retention (serum creatinine = 1.27 mg / dL, serum urea = 69.51 mg/dL) and slight hyperglycemia (119.11 mg / dL).

The diagnosis of suppurative abdominal wall cellulitis is established based on patient history, clinical and laboratory examinations, condition probably determined by posttraumatic perforation of the colon in its intraparietal trajectory, produced by the ram blow, or with the tool that was used in performing the enema. Emergency broad spectrum antibiotic treatment is established (Oxacillin 4 g/day, 160 mg/day Gentamicin, Metronidazole 2 fl/day), treatment for rebalancing supine and fluids, painkiller treatment, with LMWH. Emergency surgical intervention is performed, under general iv anesthesia combined with local anesthetic (lidocaine test negative). Curved incision is practiced in the maximum oscillation area and a muddy, fetid exudate is discharged; the subcutaneous cellular tissue is grey, devitalized, and the extent to which it is modified surpasses the skin lesion. Yet, a caudally oriented supra-aponeurotic colostomy is observed (in the circumstances of the existence of peristomal hernia). It displays a perforation of 1.5 to 1.6 cm, towards 5 o'clock, 2-3 cm away from the colostomy hole (Fig. 1, Fig. 2).

Exudate sampling for bacteriological examination is performed, as well as wide excision debridement, and removal of mortified tissue. Note that the injuries do not include the musculoskeletal aponeurotic plane. Abundant lavage with antiseptic solutions, chloramine soaked and compression bandage complete the surgery.

The positive diagnosis of a non-clostridian gas cellulitis of the abdominal wall is defined after clinical (crepitus), and



Figure 1. Wound appearance on the first day after surgery



Figure 2. Intraparietal colostomy perforation; the sinuous supra-aponeurotic trajectory of the colostomy is observed

especially intra-operative evaluation of the lesions in the subcutaneous cellular tissue (putrid necrosis stretching as an "oil spot", giving it a grey appearance), as well as the absence of damage in the musculo-aponeurotic structures (unlike necrotizing fasciitis). The aforementioned treatment is followed postoperatively. Surgical intervention as well as excisional and non-excisional debridement of wound is

practiced, initially on a daily basis, and afterwards every two days. On the third day after surgery, antibiotic treatment is modified according to the antibiogram results (*E. coli* was isolated), continuing the treatment with the administration of Cefort, Metronidazole, Neomycin.

The evolution is favorable, with improvement of general condition, of appetite, with the ceasing of fever, a decrease of leucocytosis, and normalization of the following values: serum creatinine, serum urea and glucose. The wound presents a local tendency of granulation. On the third day from hospital admission, the patient has resumed transit through stoma. Postoperative wound proximity prevents the prosthesis of the left colostomy, so that protection against contamination with feces is attempted by filling the cavity with soft bandage soaked with chloramine, and through performance of toilet and wound lavage, immediately after stool release. Fortunately, both general and local favourable evolution allow the avoidance of transit stoma relocation. On the thirteenth day after hospital admission, a bacteriological examination of wound secretion is repeated and *Klebsiella* spp is observed. The antibiotic treatment is readjusted to match the results of the antibiogram (Ciprofloxacin, Metronidazole). On the twenty-third day after hospital admission rectal examination is performed, as well as secondary wound suture under local anesthesia, with resumption of efficient prosthesis of the terminal colostomy. The patient is released on the thirtieth day after admission, appetent, non-feverish, with a wound in the process of healing, and functional left colostomy (Fig. 3). The examination performed five weeks after discharge shows a healing wound (Fig. 4).

The examination performed eleven months after discharge shows a healed wound and an uncomplicated peristomal hernia, for which the patient refuses surgery.

Discussions

Abdominal wall infections, as a complication of colostomy, do not occur very frequently. Among them, non-clostridian gas cellulitis is not the most serious condition, as compared to necrotizing fasciitis (8,9,10). The most common complication of colostomy is the parastomal hernia presented above. Parietal abdominal trauma as a result of the ram's horn blow may have caused a lacerations or even a perforation of the colostomy in its intraparietal trajectory. Performing a clisma through the left colostomy may have led to a tract perforation of the colostomy (in the circumstances of a laceration) or to an augmentation of the initial perforative injury, elements which are supported by some literature specifications (5,7). These lesions were the starting point of a parietal infection. Due to the existence of a loop with caudal orientation, and under the circumstances of a present peristomal hernia, the sinuous intraparietal supra-aponeurotic trajectory of the colostomy increased the possibility of involvement of the colon in the lower left quadrant of abdominal trauma, by extending the surface contact with the aggression agent. Obesity, elevated blood glucose values (in the absence of a known diabetes mellitus) and cancer history are recognized as factors favoring the



Figure 3. Wound appearance on hospital release



Figure 4. Wound appearance on the fifth week after hospital release

development of parietal infection, through a lack of reaction (8,9). Recognized colonic septicity, along with low body reaction / reactivity, dictates the aggressiveness of the infection (11,12). Intraoperative finding of the absence of gangrene injuries in the fascia, of the aponeurosis or muscles, were the main elements of differential diagnosis with necrotizing fasciitis, a condition displaying a more serious evolution and

less favorable prognosis (3,4,8). The differential diagnosis could have been preoperatively specified, by dosing IL1 β (with elevated rates for abscesses and cellulitis) (8).

Prompt surgical intervention and excisional as well as non-excisional repeated debridement has been the key to favourable developments, thus confirming recent studies (13). Holistic assessment of the patient and identification of the factors that could interfere with healing have required complex antibiotic, painkiller and supine treatment. Necrotizing fasciitis of the abdominal wall, with dehiscence of the left colostomy and fecal contamination of the wound, requires, in the presence of impaired general condition and installation of a toxic-septic state, the therapeutic approach of bowel derivation by constructing a transverse colon anus (8) or through colostomy reimplantation (14). In the case presented, the faecal contamination of the wound occurred due to the lack of reaction and in spite of the present chloramine bandage. Given the fact that for postoperative perianal wounds the passage of stools does not modify the evolution of the wound healing process (15), we extrapolated this therapeutic approach in our case, avoiding major surgery. The surprise was recording a favorable and linear evolution that allowed secondary suture. The use of wound treatment in negative pressure atmosphere in the therapeutic arsenal would have probably accelerated healing (1). Although abdominal wall non-clostridian gas cellulitis constitutes a rare complication of colostomy, in the case presented it required a prolonged hospitalization (30 days) and a complex and costly treatment.

Conclusions

Abdominal wall infections are large consumers of human and material resources, especially if they are complications of a colostomy. Peristomal hernia increases the possibility of involving the supra-aponeurotic colostomy in the abdominal trauma. Postoperative wound contamination with intestinal material due to the lack of reaction and to anus dehiscence does not always require surgery for transit stoma relocation, and the therapeutic approach is modulated by patients' clinical and biological evolution.

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