

AQ6

THERAPEUTIC HOTLINE

2 Excessive pediatric fasciitis
3 necrotisans due to *Pseudomonas*
4 *aeruginosa* infection successfully
5 treated with negative pressure
6 wound therapy

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15 **ABSTRACT:** The case of a 10-year old female child is described with a history of myeloproliferative
16 disorder having skin, bone and visceral involvement. Bone marrow biopsy revealed histiocytosis X.
17 During chemotherapy necrotizing fasciitis of the lower abdominal wall was diagnosed. Multiple
18 microbiological cultures taken from the wound base revealed *Pseudomonas aeruginosa* infection.
19 Surgical necrectomy and application of negative pressure wound therapy (NPWT) was started
20 together with intensive care treatment for sepsis. As both wound and general condition of the patient
21 improved, autologous split thickness skin grafting was carried out in two sitting under continuing
22 NPWT application. The applied skin grafts showed excellent take, the perilesional subcutaneous
23 recesses resolved and complete healing was achieved after 28 days of NPWT treatment. Proper
24 dermatological diagnosis and immediate escharectomy complemented with application of NPWT
25 can be life-saving in the treatment of necrotizing fasciitis.

26 **KEYWORDS:** fasciitis necrotisans, histiocytosis X, life-saving, negative pressure wound therapy,
27 pediatric case, *Pseudomonas aeruginosa* infection
28
29

Introduction

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Necrotizing fasciitis, a severe infectious condi- 31
tion associated with high mortality is relatively 32
rare in the pediatric population. Children 33

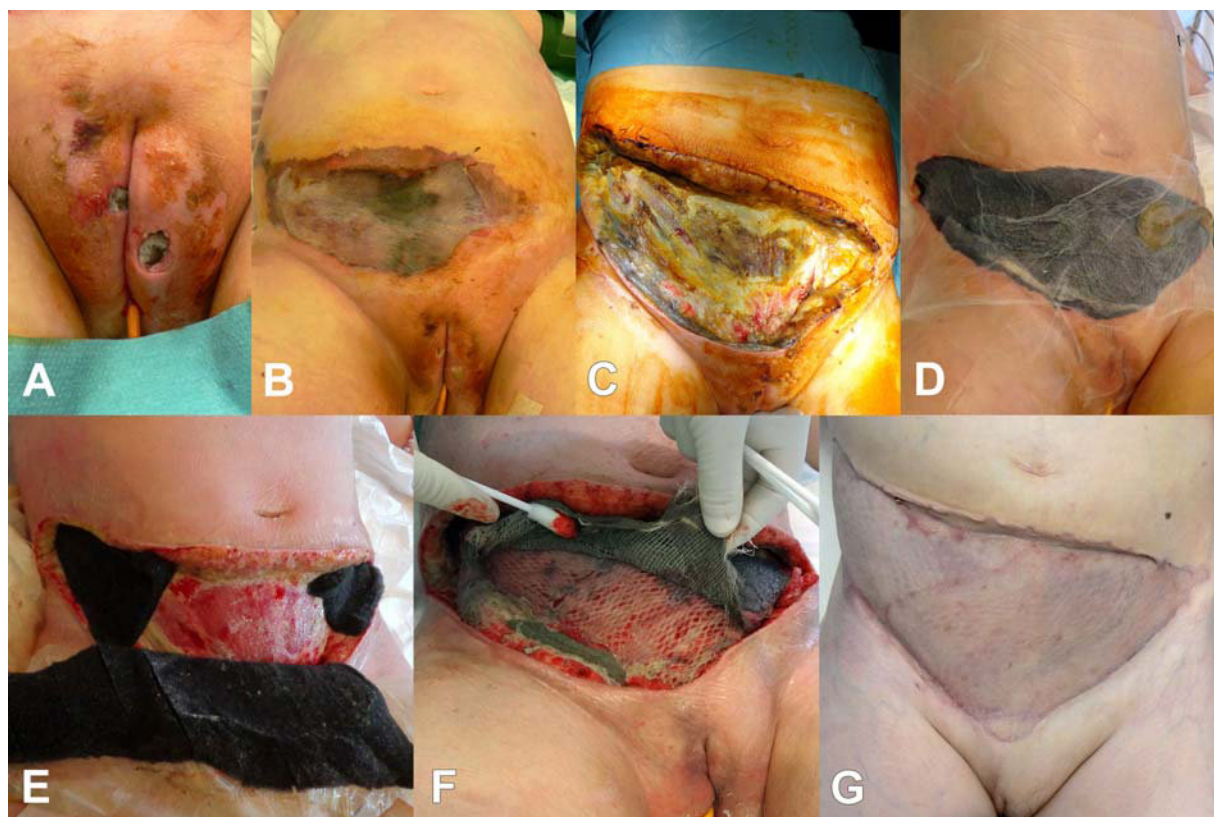


FIG. 1. ...

suffering from oncohematological disorders, either due to their disease state or to the side effect of the applied therapy have a higher chance of developing severe or even life-threatening skin and soft tissue infections. These cases are associated with intense symptoms and rapid progression along deep structures like fasciae and connective tissue septae (1). In the majority of cases the infection is caused by gram positive bacteria or gram positive and anaerobic bacteria, whereas rarely its cause can be gram negative bacteria, such as *P. aeruginosa*. (2). It is very important to contain the rapidly progressing infection by extensive removal of the necrotic tissue without delay (3). Promoting wound healing with the application of sub atmospheric pressure onto the wound bed is becoming more and more widespread not only in chronic wounds but also in acute conditions like burns, surgical site infection or fasciitis (4). This therapy while removes the excess wound fluid, diminishes absorbance of toxic substances, promotes separation of nonvital tissue and it reduces bacterial load of the treated area. It also effectively improves microcirculation and oxygenation of the necrobiotic layer of the wound thus promot-

ing regeneration (5). Even successful treatment of fasciitis necrotisans is very often associated with loss of the involved limb or other severe mutilations (6).

Case report

A 10-year old female child had a history of myeloproliferative disorder with involvement of skin, bone, and visceral organs. Bone marrow biopsy revealed histiocytosis X. The pediatric oncology team started combination chemotherapy according to the German-Austrian Lymphoma working group's DAL HX 90 induction protocol. One month later, during cytostatic therapy she developed fever with elevated CRP and PCT levels. Despite empirically chosen parenteral antibiotic therapy her general status deteriorated while an inflammatory infiltrate was observed on the vulvar skin on both sides. Incision and drainage revealed no pus discharge, combined antibiotics were installed and the perilesional redness resided. Four days later together with general septic signs a rapidly growing large violaceous-grey phlegmonous infiltrate appeared on the

skin of the lower abdomen. Dermatology consultation revealed the diagnosis of fasciitis necroticans. Extensive necrectomy of the skin of lower abdomen was carried out in general anesthesia with partial removal of the abdominal fascia. The separation of skin from abdominal wall could be followed almost up to the axillae on both sides of the torso (!). Negative pressure therapy (NPWT) was applied (V.A.C. ATS system device with Granufoam dressing, KCI San Antonio, TX) resulting in continuous drainage of thick purulent wound fluid, whose bacterial culture revealed *P. aeruginosa* infection. She was hospitalized at the pediatric ICU while surgery and wound treatment was carried out by a team of pediatric and dermatologic surgeons. Under intensive care and carbopenem therapy the general condition of the patient improved. Four days later at dressing change the wound bed appeared mostly healthy and granulating. At nine days into vacuum therapy autologous split thickness skin grafting was carried out onto the abdominal muscle and remaining fascia and NPWT was reapplied with a silver-containing impregnated gauze layer under the foam dressing. The applied skin grafts showed excellent take, and the same procedure (skin grafting + NPWT) was applied again 11 days later to the edges of the wound, to cover the rim of exposed subcutaneous fat. Parallel with epithelization the perilesional subcutaneous recesses resolved and complete closure was achieved after 28 days of continuous NPWT treatment. Further protective dressings were applied for 10 more days while successful rehabilitation therapy resulted in full recovery. Fourteen days after discontinuation of NPWT she was released home.

Discussion

Septic complications are a frequent sequel of the more and more aggressive and successful therapeutic regimes applied in the treatment of hematological disorders (2,7,8). Authors describe a case where the proper dermatological diagnosis played an important role in starting an aggressive complex therapy of necrotizing fasciitis. The

use of negative pressure devices has revolutionized wound treatment to a degree comparable to the historic introduction of the moist WH concept. Our case demonstrates the effective combined use of negative pressure therapy and aggressive debridement with antibiotic support in a rare and rapidly deteriorating impending condition. In this critically ill pediatric patient with extensive necrotizing fasciitis, the effectivity of the surgical removal of infected tissue and wound coverage was greatly enhanced by the continuous application of subatmospheric pressure both before and after split thickness skin grafting. This technique, most widely utilized in the treatment of chronic wounds, is already familiar to dermatologic surgeons. It was effectively used in this case to remove toxins and bacteria from the wound site thus complementing pediatric surgical therapy and the combined efforts led to the successful multidisciplinary treatment of this potentially lethal condition.

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