

ESCHARS TREATMENT

Dr. Liliana Cioc¹

¹National Institute of Rehabilitation, Physical Medicine and Balneoclimatology

Abstract

This article carry out a modern research and principles of the main solutions for the treatment of eschars, including cleaning solutions for wound debridement, dressings, antibiotics, surgery and adjuvant therapies. The approach taken to achieve the research is justified by the fact that, despite current interest and progress in medicine, surgery, medical care and education for self-care, pressure sores remain a major cause of morbidity and mortality, affecting in particular, people with prolonged immobilization and the elderly. The conclusions of the paper are oriented towards to analysis of the efficiency of each treatment solutions presented in active control eschars and negative effects they generate.

0. Introduction

Despite the current interest and progress in medicine, surgery, medical care and education for self-care, pressure eschars remain a major cause of morbidity and mortality. Pressure particularly affect people with prolonged immobilization and the elderly. (1) Treatments used traditionally included innovative mattresses, ointments, creams, dressings, ultrasound, ultraviolet lamps and surgery.

In choosing a treatment strategy, it is necessary to consider both wound status, and the treatment purpose, such as prevention or removal of necrotic tissue. (2,3)

Regarding the algorithm for evaluation and treatment of eschars, it is necessary to consider the following elements:

1. wound care can be divided into surgical and non surgical methods;
2. wound care is often non-surgical stage I and II;
3. in stage III and IV lesions may require surgery;

4. approximately 70% -90% of pressure ulcers are superficial and heal of non-surgical methods.

1. Principles and treatment solutions

Treatment of eschars aims to reduce risk factors, mobilization, wound care and surgical treatment.

A. Solutions for wound cleansing.

In the context of the applicable principles of treatment, there are multiple solutions to clean wounds, as follows:

a) saline solutions, which act as cleaning, thus facilitating healing (3,4)

b) Povidone-iodine, which is useful against bacteria, fungi or viruses. Dilution is recommended and its use should be discontinued when granulation tissue appears.

(3) laboratory data shows that povidone-iodine is toxic to fibroblasts in vitro, a finding which has theoretical implications for wound healing. (4)

c) acetic acid (0.5%) is particularly effective against *Pseudomonas aeruginosa*, a particularly difficult and common body. Acetic acid can change the color of tissue and may mask the potential superinfection. (4)

d) sodium hypochlorite (2.5%) is another oxidizing agent available for cleaning. Although it has some germicidal activity is mainly used for debridement of necrotic tissue. Before you use zinc oxide should be placed around the margins of the wound, in order to reduce the area of irritation. (3)

Normal saline solution should be used for rinsing after previously used sodium hypochlorite.

Market analysis revealed the availability of a variety of cleaning agents, indicating that none has proved more effective than another, while the expert opinion favoring saline. (5)

B. Debridement

Wound debridement goal is to remove all materials resulting in infection, delayed granulation, preventing healing. There are three debridement procedures that are commonly used: enzymatic debridement, mechanical debridement blocking agents, and surgical debridement.

Enzymatic debridement using various chemical agents that proteolytic enzymes, which act by attacking collagen and liquefying necrotic

debris, without damaging the granulation tissue. Proteolytic enzymes is a chemical method of debridement. The action of these enzymes are specifically addressed in necrotic tissue. (3.5)

Non-selective mechanical debridement, the necrotic tissue is weakened and eliminated, is generally achieved by strong irrigation treatments, or by using dressings. The use of these dressings involve introducing a wet gauze injury, then it will be left to dry. Several hours later, when the the bandage is removed, necrotic debris adhere to the bandage, thus eliminating. Solutions commonly used for bandages include normal saline and 0.25% acetic acid solution. Povidone-iodine solution can be used for debridement of infected ulcers. (5)

Surgical debridement, although the most effective way to remove necrotic tissue is contraindicated in some patients, mainly those who can not resist the blood loss that may occur during the procedure. Devitalized tissue wet supports proliferation and growth of pathogens. Removal of devitalized tissue that is a prerequisite for growth of new tissue (6.7)

C. Bandages.

The transparent adhesive bandages are occlusive and semi-permeable. They allow gas exchange and transfer of water vapor in the skin, preventing maceration of healthy skin around the wound. In addition, these dressings are not absorbing as they reduce the incidence of secondary infection. Transparent adhesive Bandages do not work well in patients with wounds with significant exudate. (2)

Hydrocolloid bandages hidroactive containing particles interacting with exudate to form a gel. These bandages provide absorption in trace amounts or moderate exudate and maintain the wound surface moist. This gel can be fibrilolitic properties that enhance wound healing. (2.8)

Gel bandages are available in the form of sheets, granules, and gel. All forms of bandages keep the wound surface moist gel. Some gel bandages provide some insulation, and provide protection against bacterial invasion. All bandages gel ensures atraumatic removal. (2,5,9).

Bandages based on calcium alginate (eg Sorbsan) are semioclusive, very absorbent, and easy to use. (10.11) They are natural, sterile and contain derived from brown seaweed. Bandages with calcium alginate are highly effective in

treating exudative and can be used on wounds that are contaminated or infected. (10)

D. Antibiotic treatment

Silver sulfadiazine has an excellent antimicrobial spectrum of activity, low toxicity. Silver sulfadiazine inhibits DNA replication and causes changes in cell membrane of *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans*, *Klebsiella*, *Pseudomonas*, and *Proteus species*, and *Enterobacteriaceae*.

Systemic antibiotics administered to combat wound infection can be divided into five main groups: penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and sulfonamides. Other antibiotics include clindamycin, metronidazole and trimethoprim.

E. Surgical treatment

In general, the stages I and II of pressure ulcers can be treated non-surgically. In stages III and IV of pressure ulcers, due both to the high rate of recurrence and the length of time required to close wounds often require surgery. Proper selection of surgical candidates is important due to the direct effect on extending the recovery time and costs. In addition, in case of necessity of achievement musculocutan flaps, they can be made only limited consequence that the person repeated pressure ulcers, or as a result of additional risk factors in addition to age.

Surgical procedures that are used to treat pressure eschars include direct closure, skin grafting, skin flaps, flaps musculocutan, fasciocutan flaps.

Factors affecting postoperative healing include smoking, spasticity, nutritional deficits and bacterial colonization. (12)

F. Adjuvant therapy

An alternative to the above treatment solutions, is the adjuvant therapies, which have long been described in the literature. Based on available clinical evidence, only electrical stimulation is recommended and should be considered in stages III and IV pressure ulcers if they proved unresponsive to conventional therapy.

Hydrotherapy should be considered for pressure ulcers containing large amounts of necrotic tissue, exudate and, as if it can help debridement. However, once the wound is clean and has healthy granulation tissue, water can cause damage to new tissue, and treatment

should be discontinued. Therapeutic effectiveness of hyperbaric oxygen, ultraviolet of infrared spectrum and laser irradiation was not sufficiently established so that they can be recommended for the treatment of pressure ulcers.

Since the publication AHCPR guidelines, there are two new therapies for ulcers pressure healing adjuvant that had initial evidence of efficacy: vacuum-assisted therapy (therapy under atmospheric pressure) and normothermia (12).

Vacuum-therapy or under atmospheric pressure therapy involves applying a special bandage kit, put a sheet over the adhesive transparent seal the wound. The drain of wound is connected to the negative pressure and the canister. After the starting machine, the wound fluid in excess is drawn canister. Through this system is improved blood flow in the wound, which stimulates wound healing. This method increases the blood flow in tissue from the wound and adjacent tissue, thereby increasing oxygen and nutrients supply, as well the clearance of bacteria from infected wounds, resulting in an environment that promotes wound healing (12). This method proved to be profitable in chronic wound care at home (12).

Normothermia requires the use a bandage that radiates heat, in order to speed up wound healing. Normothermia effectiveness in treating pressure ulcers was demonstrated in a study at stages III and IV, which revealed average wound area reduction of 61% over a period of 4 weeks (12).

3. Conclusions

Research carried out in this article revealed that healing pressure ulcers is influenced by multiple factors. In this context, a particularly important role is care in a multidisciplinary approach, involving both skin care, reducing pressure and ensuring adequate nutritional support.

Prevention is the key element of effective control of pressure ulcers, which is why it is necessary for it to start with a complete medical history.

Also, special attention should be given to pathophysiological factors involved in the development of pressure ulcers. Patients with increased risk should be mobilized frequently and at the same time, to benefit from adequate nutritional support, and a clean, dry skin storage. For patients which develops pressure ulcers,

these preventive measures should be used with general care techniques presented in this article. Non-operative wounds care may involve local therapy, while necrotic or infected wounds for drainage, treatment may also include: agents absorption of calcium alginate bandages with, cover wounds, debridement and antimicrobial treatment.

Also, to treatment regimen can be added and other therapeutic modalities such as special mattresses or physical therapy.

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