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CLINICAL CASE REPORT ARTICLE

TREATMENT OF A TRAUMATIC WOUND: REPORT OF CLINICAL CASE

TRATAMENTO DE UMA FERIDA TRAUMÁTICA: RELATO DE CASO CLÍNICO

TRATAMIENTO DE UNA HERIDA TRAUMÁTICA: RELATO DE CASO CLÍNICO

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ABSTRACT

Objective: to report the healing evolution of a wound treated with the use of 1% silver sulfadiazine and essential fatty acids, surgical debridement and systemic treatment with antibiotics. ***Method:*** this is a descriptive study, reporting clinical case type, in a public institution of *Uberlândia/Minas Gerais*, Brazil. It was developed in a patient with traumatic etiology injury after motorcycle accident with left lower limb amputation. ***Result:*** the wound cleaning was daily performed with 0.9% saline solution and brush soaked with 2% chlorhexidine; the topical treatment with 1% silver sulfadiazine and essential fatty acids, the surgical debridement and systemic therapy were effective accelerating the healing process. ***Conclusion:*** the association of the adequate topical therapy with surgery and systemic treatment allowed a satisfactory evolution of the wound with a growth of the granulation tissue and infection control. ***Descriptors:*** Wound Healing; Nursing Care; Intensive Care Unit.

RESUMO

Objetivo: relatar a evolução da cicatrização de uma ferida tratada com o uso da sulfadiazina de prata a 1% e ácidos graxos essenciais, desbridamento cirúrgico e tratamento sistêmico com antibioticoterapia. ***Método***: estudo descritivo, tipo relato de caso clínico, em uma instituição pública de Uberlândia/MG, Brasil. Foi desenvolvido em um paciente com lesão de etiologia traumática, após acidente motociclístico, com amputação de membro inferior esquerdo. ***Resultado***: a limpeza da ferida foi realizada diariamente com solução fisiológica 0,9% e escova embebida em solução de clorexidina 2%; o tratamento tópico com a sulfadiazina de prata a 1% e ácidos graxos essenciais, o desbridamento cirúrgico e a terapia sistêmica foram eficazes acelerando o processo de cicatrização. ***Conclusão:*** a associação da terapia tópica adequada com o tratamento cirúrgico e sistêmico permitiu uma evolução satisfatória da ferida, com crescimento de tecido de granulação e controle da infecção. ***Descritores*:** Cicatrização de Feridas; Cuidados de Enfermagem; Unidade de Terapia Intensiva.

RESUMEN

Objetivo: relatar la evolución de la cicatrización de una herida tratada con el uso de la sulfadiazina de plata a 1% y ácidos grasos esenciales, desbridamiento quirúrgico y tratamiento sistémico de terapia con antibióticos. ***Método***: estudio descriptivo, tipo relato de caso clínico, en una institución pública de Uberlândia/MG, Brasil. Fue desarrollado en un paciente con lesión de etiología traumática, luego de un accidente de motocicleta, con amputación de miembro inferior izquierdo. ***Resultado***: la limpieza de la herida fue realizada diariamente con solución fisiológica 0,9% y escoba embebida en solución de clorhexidina 2%; el tratamiento tópico con la sulfadiazina de plata a 1% y ácidos grasos esenciales, el desbridamiento quirúrgico y la terapia sistémica fueron eficaces acelerando el proceso de cicatrización. ***Conclusión:*** la asociación de la terapia tópica adecuada con el tratamiento quirúrgico y sistémico permitió una evolución satisfactoria de la herida, con crecimiento de tejido de granulación y control de la infección. ***Descriptors*:** Cicatrización de Heridas; Cuidados de Enfermería; Unidad de Terapia Intensiva.

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INTRODUCTION

The transit accident is a worldwide serious problem. Each year, transit accidents have been victimizing thousands of people, and besides producing fatal victims, it leaves temporary or permanent sequels of varying degrees among the survivors.[1] One of the sequels arising from transit accidents is the emergence of traumatic wounds caused by severe trauma which result in injuries with extensive skin loss as limb amputations, bruises, and lacerations with tissue loss. This condition leads to hospitalization and is usually associated with increased length of stay, to expenses with security and high consumption of medical and technological resources.[2]

Such event is a dynamic and complex process involving biochemical and physiological phenomenon that need to behave harmoniously to ensure tissue restoration.[3] The wounds are defined as tissue loss and can reach the dermis complete or incompletely, or even affect the whole body, reaching the subcutaneous tissue, muscles, and bones. The loss of tissue determines a tissue repair process involving mediators, blood cells, extracellular matrix that will restore the integrity of the skin initiating the healing process.[4]

This biological healing process passes through three phases starting with the inflammatory phase followed by proliferative and ending with the restorative. The fast restoration of the epidermal barrier is essential to reduce morbidity and mortality.[4]

Depending on the amount of damaged or lost tissue, of the injury cause, the healing can occur by the first intention, in which it has a reduced healing time; by second intention when there is the need for formation and granulation tissue in the wound layer and the healing by a third intention when already exists factors that retard the healing process.[3]

Although some advances have occurred on this systemic tissue repair, the wound treatment, especially the complex ones, it is still a challenge for the health team. The great changes in recent decades, in the concepts related to healing, have mobilized industries to develop and provide products on the market, more specific, effective, and appropriate to each type of wound about cost/benefit. Numerous types of covers and topical therapy were emerging in the market to promote an environment to favor the natural physiological process. This required more knowledge about the correct use of these new technologies by health professionals.[3]

The care of transit accidents victims often needs to be performed in the Intensive Care Unit (ICU), given the extent and location of the trauma.[5] Therefore, it is the responsibility of the nurse of this unit to assess, care and register the performed nursing care, a fact highlighted by a study of the nurses behavior in wound care of ICU patients. In this study, all nurses held the registration of nursing care, which assessment met the specific evaluation criteria for wounds.[8]

Thus, the objective is to report the healing evolution of a wound treated with the use of 1% silver sulfadiazine and essential fatty acids, surgical debridement and systemic treatment with antibiotics.

METHOD

This is a descriptive study, a type of case report about the treatment of a wound of a patient admitted to the ICU of a public hospital in the city of *Uberlândia*, a motorcycle accident victim, which resulted in the amputation of the left lower limb (LLL). The wound care was only performed by ICU nurses, between April and May 2015. Every day, during the dressing change, the assessment of the healing evolution was performed, according to the evaluation system by *red-yellow-black* colors (RYB), followed by the registration of observations. The dressing technique included the cleaning of the wound, topical treatment, coverage, and fixation bandage. The information was obtained from the records, studied, discussed and compared with the literature. For the publication of this study, we obtained the patient's consent, according to 466/2012 Resolution of the National Health Council (NHC), and were respected the principles of autonomy, beneficence, non-maleficence and justice.

RESULTS

A patient of 34 years old, male, previously healthy, a polytrauma victim resulting in a transfemoral traumatic amputation of the left lower limb (LLL). He was hospitalized from April 3rd to 5th, 2015; intubated, mechanically ventilated from April 3rd to 20th when he was extubated uneventfully. During the intubation period, he received a continuous pump infusion: propofol during five days; midazolam and fentanyl during 17 days; he made use of norepinephrine until April 8th, 2015. As for the antibiotic scheme, oxacillin during four days (April 3rd to 6th), Piperacillin + Tazobactam

during seven days (April 4th to 10th), Teicoplanina during 15 days (April 7th to 21st), Imipenem + Cilastatin during 14 days (April 11th to 24th) and Sulfamethoxazole during 14 days (April 22nd to May 5th). He remained with central venous access in the right jugular until April 17th, when it was replaced by a new central access, this time in the right subclavian vein until day April 22nd, 2015, with the replacement of peripheral venous access until the ICU patient discharge. Between the April 3rd and 22nd, 2015 he remained with an indwelling urinary catheter to control urinary flow. During the period he spent in the ICU, the diet was conducted by nasogastric tube and after April 21st, 2015 he started the diet by mouth. The cleaning of the wound was daily performed, at least once a day, with 0.9% saline (0.9% saline) and brush soaked in 2% chlorhexidine solution; and for topical treatment, 1% silver sulfadiazine and essential fatty acids were selected, the dressing fixing was made with sterile dressings and crepe bandages of 30 cm were used as coverage throughout the treatment. It was observed the following evolution of the wound: LLL dressing opened for the first time on April 4th (Fig. 1) showed the commitment of the total skin thickness, with approach points without active bleeding, but with 100% exudate seropurulent of the wound layer, saturated coverage and foul-smelling. The patient was referred to the surgical center (SC) on April 6th, for the liberation of the approach points, meticulous cleaning of the wound and debridement of devitalized tissue (Fig. 2). However, after the first surgical debridement, the wound had irregular edges, lacerated, yellow slough and thin consistency, loosely adhered to the edges of the wound and in the wound layer, the presence of devitalized tissue, foul-smelling; the presence of purulent exudate with 100% of the wound layer and saturated coverage. The procedure to clean and debride the wound in SC occurred twice more during hospitalization, the first three days after the first intervention and the second one four days after the second intervention. After the third approach in SC, on April 14th, 2015, the wound had epithelized tissues, with bright color, light, sensitive to pain (Fig. 3). The topical treatment with 1% silver sulfadiazine has been maintained until this date. After this day, the essential fatty acid (EOA) was introduced in combination with 1% silver sulfadiazine by the secretion absence and epithelialization areas with the presence of bright red vascularized tissues. It was necessary to carry out the dressing twice a day due to the increase in serum-exudation, saturating 100% of the used coverage. With the suspension of sedation, from 21st April 2015, it started to administer fentanyl citrate 50mcg/ml and intravenous morphine sulfate 10mg/ml, 30 minutes prior dressing, according to the prescription. From April 22nd, 2015 the dressing was performed only with essential fatty acids until the patient's discharge on 5th May 2015 and returned to be performed once a day. On April 28th, 2015 (Fig. 4), the wound was completely vascularized, color vivid, bright and clear and extensive granulation tissue area; seven days later, on May 5th, 2015 (Fig. 5), it had an extensive area of granulation tissue, blood red in color, and glossy appearance. On May 5th, 2015 the patient was discharged from the ICU to the ward, maintaining the wound treatment.

Figure 1. Initial assessment - characteristic of the wound on 04/04/2015.

Figura 2. Characteristic of the wound on 04/07/2015.

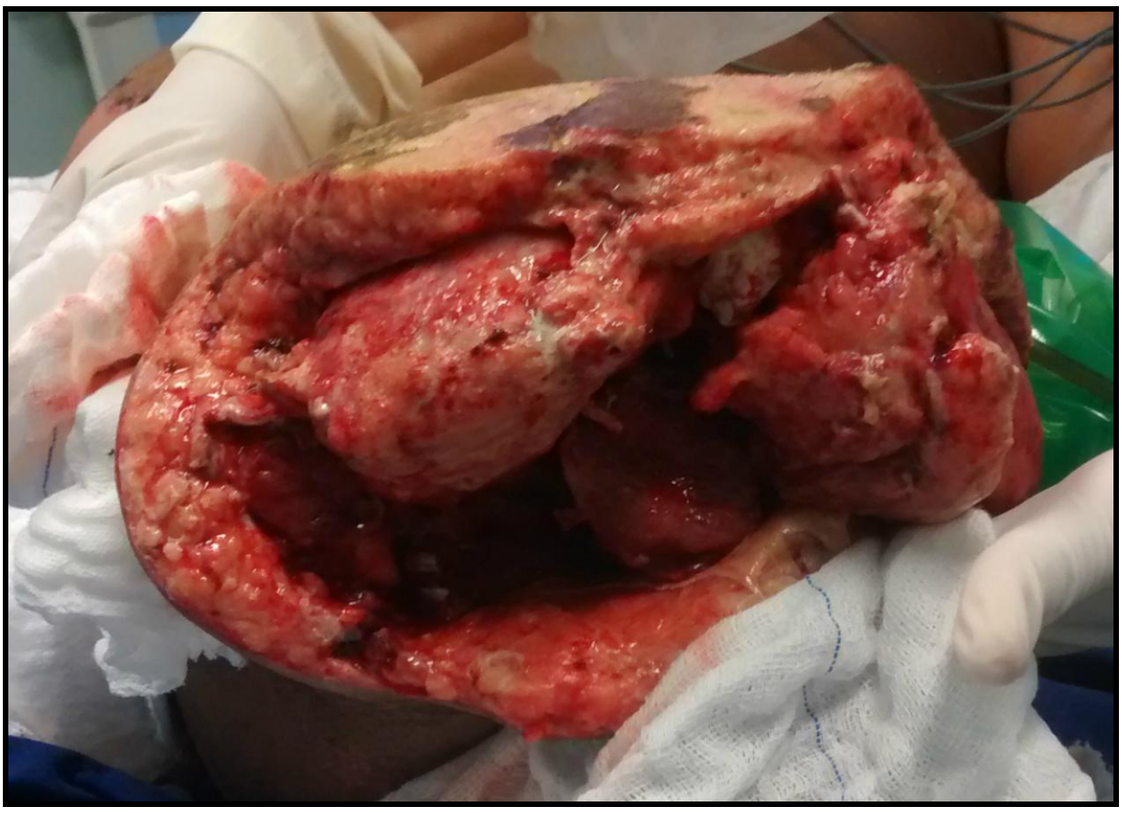

Figure 3. Characteristics of the wound on 04/14/2015.

Figure 4. Characteristic of the wound on 04/28/2015.

Figure 5. Characteristic of the wound on 05/05/2015 – ICU discharge.

DISCUSSÃO

The transit accidents are the leading causes of morbidity and mortality, and cause irreparable damage to the individual's life, leading to prolonged hospitalization and high treatment costs. The male and the young adult age group lead the high rates of morbidity and mortality among the transit accident victims.[10] The injuries caused by accidents are varied and can affect various parts of the body, and the upper and lower limbs are often achieved. Thus, the fast assessment of the patient's clinical condition and the conditions of the injuries are essential for the initiation of the treatment.[4] This report about a patient, young adult, previously healthy, a transit motorcycle accident victim, which culminated with traumatic transfemoral amputation of the left lower limb and hospitalization in an ICU for 33 days. The first chosen treatment was the application of 1% silver sulfadiazine across the wound layer and the area outside the LLL of the thigh region, about its action on the control of bacterial growth and to recommended its use in bloody wounds (Fig. 1).

The wounds with a high bacterial charge could benefit from topical application of antimicrobial and 1% silver sulfadiazine has a broad spectrum activity.[7] The association of EOA and 1% silver sulfadiazine was performed after 11 days of treatment already having tissue epithelialization and after April 22nd it was chosen to continue only with EOA. This choice is supported by a study that investigated the practices and knowledge of nurses about the local wound care, in which the EOA (100%) and 1% silver sulfadiazine (66.6%) were indicated to conduct wound treatment.[9] On the other hand, the 1% silver sulfadiazine is often cited in the treatment of burns as an antimicrobial agent and with the purpose to combat the local infection.[6] EOA shows a beneficial effect on wound healing in animals and is commonly used in granulation tissue.[8] During the hospitalization period in ICU, in addition to topical treatment, the surgical debridement was performed to help to remove the devitalized tissue and maintain a healthy wound and thus, restore skin integrity. The debridement corresponds to the removal of devitalized tissue, necrotic, damaged and/or infected in the wound layer with the use of chemical or mechanical techniques, and this is an effective method of choice when there is an urgency to debride a wound.[12] Another aspect related to treatment was the use of antibiotics. Patients considered serious in general, receive therapy with drug combination to cover the possible bacteria found in hospital flora. All drugs used during hospitalization were indicated to treat serious infections including skin infections, bones, and soft tissue, considering that the wound infection is a possible complication and, consequently, the delay in healing.[3-10] Thus, the knowledge of the physiology of healing; the etiology and clinical characteristics of the wound layer and surrounding area; the patient's underlying diseases, as well as daily wound assessment, the nurse can determine the appropriate treatment to treat the injury.[11]

Thus, the topical therapy with surgical and systemic therapy contributes accelerating the healing process. The surgical treatment through a large wound washing, together with the debridement of devitalized tissue, has enabled to keep the viability of the wound layer, the infection control and the action of topical therapy promoting healing by second intention.[3-12]

CONCLUSION

Technological advances have enabled improvements to the wounds treatment, accelerating the healing process and providing a better quality of life for patients with skin lesions.

In addition to the products cited in this study, new formulations and coverage's have emerged on the market for the wounds treatment, however, besides these innovations, the daily assessment of the wound contributes to the success of the treatment.

This study showed that the chosen topical treatment, associated with early surgical treatment was effective to stimulate wound healing, and these were decisive factors in the favorable outcome.

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