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Wound Treatment Using Aloevera in the Process of Accelerating Wound Healing for Post-Op Patients at the Lompe Ntodea Community Health Center

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ABSTRACT

The high incidence of wounds in Indonesia means that effective and efficient wound care is needed, therefore one good wound treatment is to use Aloevera as a medicine and provide protein nutrition as a nutritional intake for wounds. The aim of this research is to find out how fast the process of wound tissue growth is using Aloevera gel. This research method uses a case study approach on post-operative patients. Wound care procedures were carried out 22 times using aloe vera gel. Wound care techniques used are tissue management inflammation and infection control, moisture balance, epithelial (TIME). The measuring tool in this research used the Bates Jensen Wound Assessment Tool (BWAT) observation tools. The research results found a relationship between Aloevera gel and accelerated wound healing where tissue growth occurs. The conclusion of this research is that therapy using aloevera will speed up the wound healing process where the concept of modern wound dressing treatment is to maintain wound moisture so that it will accelerate tissue growth around the edges of the wound. and fulfilling protein nutrition really helps the wound healing process in patients, namely protein functions in growth, maintenance of body tissue and tissue repair.

Keywords: care, gel aloe vera, wound

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BACKGROUND

Wounds are defined as damage to biological tissue in the skin and mucous membranes (Herman & Bordoni, 2023). Wounds have different levels of severity so it is possible to experience quite severe infections with very large organ damage, skin and mucous membranes. (Wilkins and Unverdorben 2013). Types of wounds are divided into two, namely acute wounds and chronic wounds. Acute wounds are wounds that heal within the expected time period, while chronic wounds are wounds where the healing process is delayed. Wounds can be classified in terms of severity from light, medium and severe, while the wound stage is divided into 4 parts, namely grade 1 to grade 4. The healing process also takes different amounts of time and can be influenced by the severity of the wound and the stage of the wound. (Herman and Bordoni 2023).

The World Health Organization (WHO) reported that there were 140 million patients with post-operative wounds in hospitals throughout the world in 2017 and an increase of 243 million people who experienced post-operative wounds in 2020 (WHO, 2020). The Ministry of Health of the Republic of Indonesia (Kemenkes RI) reported that 12.8% of operations were carried out in Indonesia or 1.2 million patients in the period 2019 to 2020 (Alidina et al., 2019).

The types of wounds that often occur in Indonesia are acute wounds such as accident wounds, surgery, burns and puncture wounds, while chronic wounds such as pressure ulcers, diabetic ulcers, cancer. Abrasions are the highest type of injury experienced by the Indonesian population, namely 70.9%, followed by lacerations at 23.2%. As many as 40.9% of injuries were caused by falls and 40.6% by motorbike accidents. Other causes include sharp or blunt objects (7.3%), other land transportation (7.1%), and falls (2.5%). (Fatchurrozak, 2020).

Meanwhile, data on the prevalence of diabetic ulcer sufferers in Indonesia is around 15%, the amputation rate is 30%, apart from that, yesterday's figure 1 year after amputation was 14.8%. In fact, the number of diabetic ulcer sufferers in Indonesia can be seen from an increase in prevalence of 11% (Rikesdas, 2018). According to the Ministry of Health, in 2016-2018 there was an increase in the incidence of burns by 35%. In 2018 there were 1,701 (20.19%), in 2017 there were 1,570 (18.64%), in 2016 there were 1,432 (17.03%), the majority of around 80% of burn injuries occurred at home and 20% occurred at home. workplace (Ministry of Health of the Republic of Indonesia, 2018; Alivio et al., 2023)

From the data obtained, it is necessary to handle and care for wounds effectively and efficiently by taking into account the economic conditions of the surrounding community. Currently, there are many wound care methods that are applied in everyday life, both conventional methods and methods using modern dressings. Modern dressing methods are currently very popular among wound care practitioners using the method of tissue management inflammation and infection control moisture balance epithelial (TIME) to treat wounds. One of these methods is debridement with an enzyme technique to use aloevera.

Aloe vera contains active compounds such as saponins, anthraquinones (alonin, babalion, antrhanol, aloetic acid, aloe emodin, yakheter), vitamins B1, B6, B12, vitamin C, potassium, sodium, zinc, manganese, polysaccharides, carbohydrates, amino acids, enzymes, catalase, lipase, aminase, fats, minerals (Melliawati, 2018). Aloe vera plays an important role in the wound healing process, its contents have the function of moisturizing wounds, preventing infection, providing nutrition, accelerating skin regeneration so that it can speed up the wound healing process (Liang et al. 2021). From research conducted by Nathalia Safitri et al 2021, it was found that there was a relationship between nutritional adequacy rates, protein and wound healing in decubitus ulcer patients. Where meeting protein needs is very important in the wound healing phase which includes fibroblast proliferation, collagen

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synthesis, angiogenesis, and immune function. This research is strengthened by research conducted by Melani Puji Lestari et al 2021 that the fulfillment of macronutrients and micronutrients, both of which are needed in the body to support the DFU wound healing process. Each of these components has an important role in the wound healing process.

Nutrition has a very important influence on the healing process, one of which is protein, where the function of protein is specifically for growth, maintenance of body tissue and tissue repair, therefore nutritional factors are really needed in wound care. Good wound care management and adequate nutrition for the body will make the wound healing process easier. Basically, the concept of wound care using Aloevera is the same as wound care using hydrogel, namely by applying it directly to the wound. There are three consequences that can be obtained in treating wounds using Aloevera Enzymes, first, effective and efficient wound care, second, easy to apply and third, it can be done at home.

By applying wound care using aloe vera, it is hoped that nurses can change their mindset in providing nursing care that the concept of wound care will continue to develop over the years so that there is a need to update knowledge. It is hoped that patients can change their behavior, especially in fulfilling nutrition to support healing so that they need Micro and macro nutrients can be fulfilled every day. Hakim (2020) Aloevera contains B complex vitamins such as Thiamine, cynocobalamin, and Ribovlafin which function to repair nerve cells for the human body. Wounds that occur due to various incidents can affect nerve cells, one of which is damaging nerve cells in body tissue which causes the body to release hormones. prostaglandins which stimulate pain and inflammation. Therefore, the body needs vitamin B to repair nerve cells which will later help the process of tissue growth in wounds and reduce pain by reducing levels of prostaglandin hormone production.

This study aims to find out how fast the process of wound tissue growth is using Aloevera gel in post-operative patients.

METHODS

This research method uses a case study approach on post-operative patients. Wound care procedures were carried out 22 times wound care using aloe vera gel. Wound care techniques used are tissue management inflammation and infection control, moisture balance, epithelial (TIME). The measuring tool in this research used the Bates Jensen Wound Assessment Tool (BWAT) observation tools.

RESULTS

The case taken was a case of a wound in a post-operative skin cancer patient who had a surgical wound where the wound was a new wound that had never received any treatment, either with conventional methods or modern methods.

History of post-operative skin surgery on the left leg on 06 September 2023. Wound treatment began on 09 October using aloevera gel. Perform wound care every 2 days for 45 days. Wound characteristics include epithelialization, granulation and stage 2 wounds and slough. Basic Color: Red wound. The surrounding environment is damp and well maintained. GDS: 97 mg/dl, TTV: BP: 140/90 mmHg, N: 88 x/minute, S: 36 C, RR: 22 x/minute. Wound assessment using the Bates Jensen instrument.

On September 16, size 4 to <16 cm2, namely wound 5 x 5 cm (2), wound depth 0.5 cm with laceration of the epidermis and/or dermis layer (2), wound edges The edges appear to be fused with the base of the wound, (2) . GOA (hole in the wound that is under healthy tissue. Cave < 2 cm in any area (2), type of exudate serosangueneous (watery, watery, pale red or pink) (3), amount of exudate. Moist wound surface, exudate soaks < 25% of the dressing (3), , skin color around the wound Pink or normal skin color in each part of the wound (1), . Peripheral Edema / Edge of Tissue, Pitting edema < 4 cm long around the

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wound. (4), skin around the wound Bright red to the touch (2) , Pitting edema tissue < 4cm long around the wound , granulation tissue No granulation tissue (5) and epithelialization < 25% epithelialization (5). Total of 31 scores.

Figure1. First day wound care

On October 16, size < 4 cm, wound 3.5x4 cm (1), wound depth 0.2 cm with laceration of the epidermis and/or dermis (2), the edges of the wound. The edges appear to merge with the base of the wound (2). GOA (hole in the wound under healthy tissue. Cave < 2 cm in any area (2), serosanguineous exudate type (watery, watery, pale red or pink) (3).

Amount of exudate Moist wound surface exudate soaks < 25% of the dressing (2), skin color around the wound Pink or normal skin color in each part of the wound (1), Peripheral Edema / Tissue Edges. No pitting edema < 4 cm long around the wound (2), granulation tissue Bright, red like flesh; <75% and > 25% of the wound is filled with granulation (3). Epithelization 25% to 50% (3). Epithelialization is characterized by the shrinking of the wound and the reduction of pain in the wound area and the tissue starting to fuse from the edges of the wound. Total of 21 scores.

Figure 2. Wound care after 15 treatment procedures

On 30 October 2023, the size of the wound was <4 cm, namely 2.5x3 cm (1), the depth of the wound was 0.1 cm with laceration of the epidermis and/or dermis layers (2), the edges of the wound were seen to be fused with the base of the wound (2). GOA (hole in the wound that is under healthy tissue. Cave < 2 cm in any area (2), Serous exudate type (watery, watery, clear) (4). amount of exudate. Moist, the wound looks moist but the exudate is not observed (2). Skin color around the wound Pink or normal skin color in each part of the wound (1), Peripheral Edema / Edge of Tissue. No pitting edema < 4 cm long around the wound (2), granulation tissue Bright, red like flesh; <75% and >25% of wounds are filled with granulation (3). and epithelialization 50% to <75% epithelialization (3) Epithelialization is characterized by the shrinking of the wound and reduced pain in the wound area and the tissue starting to fuse from the edges of the wound. Total of 22 scores.

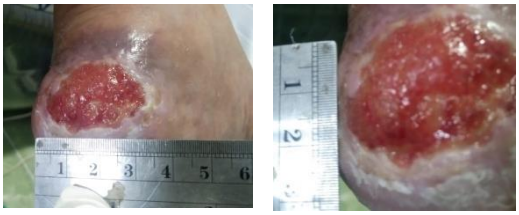

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Figure 3. The last wound care was 22 wound care procedures

The relationship between Aloevera gel and accelerated wound healing occurs where tissue growth occurs starting from the edges by reducing the size of the wound from 5x5 cm using Aloevera enzymes. The wound size becomes 2.5x3 cm from the presence of slough to no slough after wound care for 45 day.

DISCUSSION

Wound care is the action of nurses to maintain homeostasis of the wound condition so that the wound can heal physiologically using methods, where currently the most popular method is using modern wound care dressings with the TIME application, one of which is using the aloe vera enzyme method for the healing process. wound . Actions Wound care is one of the skill components that must be mastered by nurses because the incidence of wounds in Indonesia is still high, ≤ 8.2% of the population.

Research conducted by Arifin and Anna in 2022 compared conditions before and after wound treatment using aloe vera extract with the measurement instrument used, namely the Bates Jensen Wound Assessment Tool (BWAT) observation sheet. The results of the case study show that wound treatment with aloe vera extract shows a decrease in wound size and an increase in the degree of epithelialization and granulation, so it can be concluded that the content of aloe vera extract has a good effect on the healing process of diabetic ulcer wounds.

Aloe vera gel contains tannin and saponin compounds which can heal wounds by capitalizing on proteins in wound tissue. This protein is really needed for the granulation process in wounds. Apart from that, aloe vera is used as an antiseptic and wound moisturizer because the content of aloe vera contains antibacterial and gel properties. can support rapid tissue growth because it inhibits the growth of bacteria that produce slough or pus, where we all know that slough can complicate the wound healing process (Anna et al. 2020).

According to Hakim (2020) Aloevera contains B complex vitamins such as Thiamine, cynocobalamin, and Ribovlafin which function to repair nerve cells for the human body. Wounds that occur as a result of various incidents can affect nerve cells, one of which is damaging nerve cells in body tissue which causes the body to release prostaglandin hormone which stimulates pain and inflammation. Therefore, the body needs vitamin B to repair nerve cells which will later help the process of tissue growth in wounds and reduce pain by reducing levels of prostaglandin hormone production.

Wound treatment carried out with modern dressings using aloe vera hydrogel (Aloevera) is very effective in maintaining moisture and shows results, namely tissue changes where epithelialization and granulation occur at the edge of the wound, reduced wound depth and reduced slough in the wound. According to Betes Jensen, several components of wound assessment include reducing the size of the wound, depth of the wound, percentage of granulation, epithelialization, absence of slough. The stages of action taken are washing the wound using RL or Nacl, carrying out mechanical debridement, determining the appropriate dressing/dressing, namely with aloe vera hydrogel, wound ointment (metcovazin) as topical therapy, closing the wound using sterile gauze or Impravia neoabsorb dressing.

Davood Hekmatpou et al 2019 there are 75 known compounds that have been identified in aloe vera, including 20 minerals, 20 amino acids, vitamins, and water. 5,6 In vitro research and studies conducted on living organisms show that aloe vera can inhibit thromboxane (inhibitor wound healing), improves the wound healing process, and reduces inflammation. 3.7 Magnesium lactate available in gel can prevent the production of histamine which causes itching and irritation of the skin. Also improves the immune system and cytokine synthesis.

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Aloe vera effectively inhibits inflammatory reactions through inhibiting IL-6 and IL-8, reducing leukocyte adhesion, increasing IL-10 levels, and reducing TNF alpha levels. Its regenerative properties are due to the glucomannan compound which is rich in polysaccharides such as mannose. Glucomannan affects fibroblast growth factor receptors and stimulates their activity and proliferation, which in turn increases collagen production. Aloe vera (Aloe vera) contains active compounds such as saponins, anthraquinones (alonin, babalion, antrhanol, aloetic acid, aloe emodin, yakheter), vitamins B1, B6, B12, vitamin C, potassium, sodium, zinc, manganese, polysaccharides, carbohydrates, amino acids, enzymes, catalase, lipase, aminase, fats, minerals (Melliawati, 2018). Ananda et al (2018) stated that skin injuries treated with Aloe Vera extract have a faster effect in the wound healing process because the content of Aloevera will help the collagen formation process quickly so that skin cell regeneration occurs more quickly.

Aloevera contains polyphenol compounds as antioxidants which can ward off free radicals and strengthen the body's defense system so that it can facilitate the proliferation process in wounds. Flavonoids can be used as anti-hypertensives because their content can inhibit nicotinamide adenine dinucleotide phosphate (NADPH) oxidase through inhibiting Angiotensin-converting enzyme (ACE) (Elma et al., 2021). We all know that ACE inhibitor drugs are usually used by doctors to improve blood pressure. blood in the arteries, which will speed up the wound healing process by improving blood flow to body tissues which can provide nutrients and oxygen to the tissues.

Docking research (2022) shows that phenolic acids and flavonoids inhibit ACE through interactions with zinc ions and this interaction is stabilized by other interactions with amino acids in the active site. Nutrition in the wound healing process requires nutritional components, both micronutrients and macronutrients, to repair tissue and nerves that have been damaged, therefore the body needs protein, vitamins, polysaccharides and amino acids to form new cells in the cell regeneration process, therefore wound treatment is not only comes from outside the body but comes from inside the body.

The therapy used in wound care uses aloe vera enzymes, chitosan and zinc. This substance is very useful for keeping wounds moist by maintaining the condition of the wound by absorbing it into the skin tissue. This gel will prevent the loss of body fluids from the surface of the skin so that the skin does not dry out. This plant also contains compounds that can stimulate the growth of new skin cells (Ferawati 2018).

CONCLUSION

From the case study carried out above, it was concluded that the use of therapy using aloevera will speed up the wound healing process where the concept of modern wound dressing treatment is to maintain wound moisture so that it will accelerate tissue growth around the edges of the wound. and fulfilling protein nutrition really helps the wound healing process in patients, namely protein functions in growth, maintenance of body tissue and tissue repair.

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