

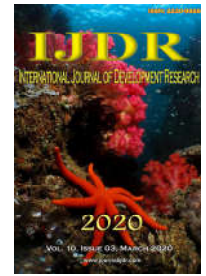


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SIMPLE BLIND CLINICAL STUDY OF SCARING ACTION IN *ALOE VERA* AS COVERAGE IN PRESSURE INJURIES IN HOSPITALIZED PATIENTS

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ABSTRACT

Pressure injuries are a public health problem, with tissue repair being one of the main objectives of clinical intervention. The use of therapeutics based on medicinal herbs has grown over the years in the context of health. In this context, studies involving phytotherapies that collaborate with the healing process are being discussed, among them are those with the use of *Aloe vera*, which have been seen as a therapeutic option or complement. **Objective:** To analyze the use of *Aloe vera*- based coverage for the healing of pressure injuries in hospitalized patients. **Method:** clinical study, involving 10 individuals from a public hospital in the south of the state of Tocantins (TO), using an instrument for data collection and daily dressing for injuries. **Results:** he presented ages between 33 and 87 years, 60 % were male, 50% of the brown diet and 60 % declared themselves non-smokers. As for the injury, there was a total of 20 pressure ulcer and 40 % of these with stage 2 staging. The location of the pressure injury that prevailed was the sacral region, 45% and 30% of them had epithelialization. **Conclusion will be:** It should be noted that the gel the base *Aloe vera* has anti-inflammatory properties promoting faster healing. We also found advantages in relation to the cost benefit, since the gel based on Aloe vera has low economic cost and is easily accessible.

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INTRODUCTION

The high incidence of pressure injuries in hospitalized patients is a fact known to health professionals and has led to several discussions on the subject because this type of injury is equally frequent in different health institutions, in addition to having a recurrent character and present significant morbidity (ALBUQUERQUE; ALVES, 2010). When the soft tissue is pressured by a bony prominence or by an external surface for a prolonged time, an injury arose, known as pressure injury (SANDERS; PINTO, 2012). According to the National Pressure Ulcer Advisory (NPUAP), the prevalence of pressure injury in hospitals in the United States ranges from 3% to 14%, being 15% to 25% in chronic patient services and 7% to 12% in home care (EDSBERG *et al.*, 2016). Sanders and Pinto, (2012), still brings us that in Brazil we have few publications that deal with the prevalence of pressure injuries, however, it is known that the prevalence in the hospital environment is high,

where quadriplegic patients have around 60%, elderly people with femoral neck fractures reach 66% and critically ill patients with 33%. Tissue injury can lead to pain and physical and emotional discomfort, weakening and incapacitating the individual. When the skin suffers damage, the repair process begins, with the restoration of the functional and anatomical activity of the tissue. There are systemic and / or local factors that can affect the trajectory of tissue repair, improving or worsening the development of the healing process (GONÇALVES; RABEH; NOGUEIRA, 2014). In Brazil, the inclusion of complementary therapies has been encouraged, providing opportunities for their expansion and effectiveness within the scope of the Unified Health System (SUS); these therapies are comprehensive to the wound healing process (VARGAS *et al.*, 2014). In this perspective, experimental studies based on medicinal plants and other principles that act in the tissue repair process are being developed and, among them, are the researches with the use of Aloe vera (OLIVEIRA;

SOARES; ROCHA, 2010). Therefore, this work aims to compare the healing process in pressure injuries of hospitalized patients, under the influence of topical treatment with gel based on Aloe vera 0.5% and with the KOLAGENASE® ointment conventionally used.

MATERIAL AND METHODS

This is a simple-blind clinical study, carried out at the Southern Reference Hospital of the State of Tocantins, in hospitalized patients, with data collection and procedure (dressing in the lesions). The sample consisted of 10 (ten) patients. These were followed for a period of 6 (six) to 14 (fourteen) days, with daily dressings in the pressure injuries. For the selection of participants, physical evaluation of patients was performed in order to verify the presence of pressure injury. The follow-up period was defined as it is a satisfactory time interval for checking the scar response. Individuals of both sexes were included, with 4 (four) females and 6 (six) males, aged between 33 (thirty-three) and 87 (eighty-seven) years of age, who presented at least (2) two pressure injuries. Regarding the material, a gel based on KOLAGENASE at 0.6U / g was used - industrialized medicine, available at the hospital and already used in the local routine and gel based on Aloe vera at 0.5%, due to the fact that this dosage was registered in the ANVISA for topical use, handled in a masterful pharmacy by registered professionals and with correct quality control.

At first, individuals were assessed by the nurse / researcher for the injuries presented, with the injuries being classified in the same participant, in "group A" (injury existing on the right side of the body or upper torso) and "group B" (existing injury on the left side of the body or lower torso). Group A lesions were treated with Aloe vera gel and group B lesions were treated with KOLAGENASE gel. It is worth mentioning that the same patient has injuries in both group A and group B. The dressings were performed by the researcher, duly identified by the permanent education unit (NEP), with a daily occlusive dressing, using 0.9% saline solution for cleaning the lesion and therapeutic gel, maintaining proper care and identification so that there is no mixing of the gels, ensuring that the lesion was treated with the same gel from the beginning to the end of therapy, where the bandages on the right side of the body and / or the upper part of the trunk were identified as "group A" and the bandages on the left side of the body and / or the lower part of the trunk were identified as "group B". Anamnesis and physical examination of the patients were then performed (detection of the presence of LP), followed by the initial photographic record of the lesion and record in a daily control instrument, where, at the time of the first dressing, a form was filled out with the following variables: identification (age, sex, skin color, marital status, admission); conditions inherent to the patient (smoking, nutritional conditions, mobility, medications in use, days of treatment and inpatient clinic); physical evaluation of the lesion (location, staging, exudate, bed vitality, edges, depth and odor), and space for additional observations. The healing process was monitored by means of a photographic record, using the software Image J® to quantify the lesion area, on days 0, 2, 7, 10 and 14 of treatment. Healing is divided into three fundamental phases: inflammatory (3 to 4 days), proliferative (2 to 4 weeks) and remodeling (from then on). At a certain moment, the phases coincide and happen simultaneously, thus allowing successful healing (Felix *et al*, 1990; BLANES, 2004). This study was approved by the Ethics

Committee of the Federal University of Tocantins (UFT) in the city of Palmas / TO, opinion No. 3.024.516.

DISCUSSION AND RESULTS

In the present study, 10 (ten) people (n = 10) participated, all participants were evaluated, with 02 (two) injuries from each patient being selected, where one injury was indicated for group A (Aloe vera) and the other for group B (KOLAGENASE®), totaling 20 injuries (n = 20). The data found and weighted were distributed in four subtitles: socioeconomic characterization, hospital history, clinical evaluation and image evaluation.

Table 1. Characterization of the subjects (n = 10) according to the socioeconomic profile Tocantins, 2019.

	n	%
SEX		
Male	06	60,0
Feminine	04	40,0
AGE		
33 -- 51	01	10,0
51 -- 70	05	50,0
70 -- 87	04	40,0
SKIN COLOR		
Yellow	01	10,0
White	03	30,0
Black	01	10,0
Parada	05	50,0
MARITAL STATUS		
Not Married	03	30,0
Married	02	20,0
Divorced	01	10,0
Widower	04	40,0
SMOKER		
Yes	04	40,0
No	06	60,0

Table 2. Characterization of the history of hospitalization of the research subjects, (n = 10) Tocantins, 2019.

	n	%
Location Of Hospitalization		
Medical Clinic	06	60,0
Intensive Care Unit	04	40,0
Treatment Days with the Ointment in Study		
01 -- 07	02	10,0
07 -- 14	18	90,0
MOBILITY		
Bedridden	07	70,0
Walks without assistance	01	10,0
Walks with assistance	01	10,0
Wheelchair	01	10,0
NUTRITIONAL STATUS		
Low weight	02	20,0
Normal	05	50,0
Overweight	03	30,0

Source: Own research

Socioeconomic characterization

Socioeconomic characteristics (sex, age, skin color, marital status, nutritional status and smoking) were analyzed and shown in Table 1, represented as to frequency and percentage. The study showed a predominance of males (60%) regarding the incidence of pressure injuries, however we did not find data in the literature to prove this statistic. The dominant skin color was brown (50%), justified by the predominance of the mestizo population in the study site.

Table 3. Characterization of pressure injuries, (n = 20) Tocantins, 2019

	n	%
INJURY CLASSIFICATION		
Stage 1	01	05,0
Stage 2	08	40,0
Stage 3	07	35,0
Stage 4	04	20,0
INJURY LOCATION		
Sacral region	09	45,0
Calcaneal region	04	20,0
Trochanter region	02	10,0
Posterior region of the chest	01	05,0
Occipital region	01	05,0
Thigh region	01	05,0
Leg	01	05,0
Knee	01	05,0
DEPTH OF INJURY		
Deep	10	50,0
Superficial	10	50,0
EXSUDATE		
Seropurulent	07	35,0
Serous	04	20,0
Absent	04	20,0
Purulent	03	15,0
Bloody	02	10,0
ODOR		
Odorless	17	85,0
Foul Odor	03	15,0
PREDOMINANT TISSUE IN LESION BED		
Epithelialization	06	30,0
Slap	05	25,0
Fibrin	04	20,0
Granulation	03	15,0
Necrosis	02	10,0
INJURY EDGE		
Irregular	07	35,0
Hyperpigmented	06	30,0
Macerated	04	20,0
Dry	03	15,0

Source: Own research

Table 4. Average price of the formulation based on KOLAGENASE[®] and *Aloe vera*

Formulation	Price average
KOLAGENASE [®] (30 g, ointment 0,6 U/g)	R\$ 39,10
<i>Aloe vera</i> (100g, 0.5% gel)	R\$ 20,00

**Figure 1. Sacral lesion, treated on days 0 (A) and 14 (B) with *Aloe vera* and treated on days 0 (C) and 14 (D) with KOLAGENASE[®].**

We also have to consider reports in the literature that black skin is a complicating factor in the identification of stage 1 pressure injury, which may have contributed to decrease incidences in this population (Blanes *et al.*, 2004). The age of the participants varied between 33 and 87 years, with an average of 64.6 years, with a predominance of participants over 60 years (80%). Studies, such as that by Rogenski and Kurcagat (2012), show that the elderly are part of the group most susceptible to the development of pressure injuries, as they present a reduction in skin elasticity, a decrease in muscle mass and the frequency of cell replacement, making this skin more fragile, all due to the physiological aging process. Participants with widowed marital status prevailed (40%), predominance of non-smokers (60%).

Hospital History: In order to explain the participants' hospitalization history, tabulation of the data pertinent to the place of hospitalization, days of treatment with the ointments under study, mobility and the nutritional status of the studied sample was performed. The data were displayed in Table 2, represented as to frequency and percentage. The patients were admitted to the ICU (40.0%) or Clinical Medicine (60.0%). Pressure injuries were followed up and monitored daily with dressings. In total, most patients received daily dressings for more than 7 days (90%), with only one participant accompanied for less than 7 days, due to death, and the same remained in the data group. The majority of the interviewees had unsatisfactory mobility, bedridden (70%), walking with assistance (10%) and wheelchair users (10%), being considered as a negative factor, because locomotion is an effective process in the prevention of pressure injuries and in the physiological mechanisms encouraging the proper work of the cardiovascular, respiratory, musculoskeletal and neurological systems.

Only 10% of the participants had satisfactory mobility, walking without assistance. Through the analysis of the body mass index (BMI), it was observed that half of the interviewees exhibited normal nutritional status (50%), BMI 20 - 24.99 kg / m², followed by overweight participants (30%), BMI 25 - 29.99 kg / m² and participants with low weight (20%), BMI <20 kg / m², according to the terminology proposed by Garrow (VANNUCCHI, 1996). Ten patients were evaluated and monitored in the study, with a total of 20 pressure ulcers studied. The gel based on Aloe vera proved to be effective as a healing and anti-inflammatory topically, and it is reported in the literature that this process occurs due to the presence of the substances aloine, alontóina and anthraquinones in its sap (RAMOS; PIMENTEL, 2011). Pressure lesions treated with topical application of Aloe vera-based gel showed progressive improvement of the lesion, maintaining good hydration, decreased size, formation of granulation and epithelial tissue, and more, some patients reported improvement in pain. Clear acceleration of the healing process of pressure injuries. There were no adverse events related to the dressing and the acceptance of the product was satisfactory.

Clinical Evaluation: In the clinical evaluation, data were collected on the following aspects related to pressure injuries: classification, location, depth, exudate, odor, tissue predominant in the bed and edges of the lesion. Data shown in Table 3, represented by frequency and percentage. Regarding the staging of the lesions, there was a predominance of pressure injury in stage 2 (40%), confirming a study by Moro (2007), for hospitalized patients. Patients had pressure injuries in different regions of the body, we found a higher prevalence in

the sacral region (45%), followed by the trochanter region (20%), indicating that patients spend most of their time in the dorsal or lateral position. Studies have shown different results regarding the second site of greatest appearance, with the calcaneus region most affected (Wong and Stotts, 2003; Lindgren *et al.*, 2004; Moro *et al.*, 2007). In the depth aspect, there was a similarity, 50% of the patients had deep lesions and the other 50% had superficial pressure injuries. With regard to the presence of exudate, 35% of the lesions had seropurulent exudate in small amounts, followed by 20% of pressure injuries showing serous exudate. The literature shows us that the presence of exudate helps in healing, preventing the dryness of the wound and promoting the migration of repair cells to the wound bed (ISAAC *et al.*, 2010). Regarding the predominant tissue in the bed of the lesions, we found epithelial tissue (30%), followed by slough with (25%), fibrinous tissue (20%), granulation (15%) and only in 10% was necrosis found, indicating need for debridement. In the daily evaluations, there was a gradual evolution in the signs and symptoms characteristic of lesions and the actions of the Aloe vera-based ointment in reducing the wound. In 85% of the pressure injuries there was no odor. In the analysis of the edges, we found most of them irregular (35%), which, according to Rabe (2012), is usually present in the inflammatory phase of the healing process. Followed by hyperpigmented edges (30%), with maceration process (20%) and dry edges (15%).

Evaluation of Images and Cost Benefit Treatment: In the evaluation of the images, a comparison of the pressure injury was made on day 0 and on day 14 of treatment with the herbal medicine based on Aloe vera. The images show improvement in the lesions, as shown in Figure 1. The pressure injury prolongs hospitalization, represses the patient's recovery and increases the risk of developing complications, including infection and osteomyelitis. The fact that the gel based on Aloe vera has anti-inflammatory and catabolizing properties of the healing process, the treatment proved to be promising, promoting faster healing. In addition to the positive results regarding healing, we also found advantages in relation to the cost benefit, since the gel based on Aloe vera has low economic cost, as shown in Table 4, and is easily accessible, being handled in magistral pharmacies. Through the average values of both formulations and the amount of product in each package, we can highlight that the A. vera gel is economically viable and coupled with the benefit of better healing time and aspect of the lesions, this formulation presents better cost-benefit. It is also suggested the need for further research to study the application of this herbal medicine in doses higher than that used (0.5%) in pressure injuries, in order to obtain better results regarding the final healing time of this type of treatment. wound.

Conclusion

Through the results raised by this study, we can conclude that the gel based on Aloe vera is a promising medicine for the treatment of pressure injuries, thus reducing the aspect and the healing time, besides being an economically more viable alternative.

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