

Nurses and the Use of Collagenase in the Treatment of Chronic Wounds

ORIGINAL

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Abstract

Objective: The objective was to verify the skill of nurses about the use of collagenase in the treatment of chronic wounds.

Method: A descriptive study of a qualitative approach performed with medical clinic nurses from two hospitals. The data were collected processed using the content analysis technique.

Results: Worked categories: 1. Knowledge about the mechanisms of action of collagenase in the treatment of chronic wounds. 2. Reasons for use and destruction of collagenase in the treatment of chronic wounds.

Conclusion: The study showed that nurses have knowledge that collagenase is a debriding enzyme that aids in the healing process, particularly by removing the necrotic tissue in wounds; however, there is still the need to improve the relevant knowledge concerning the use of this substance in dressings made in their chronic lesions, even in view of the apparent lack of knowledge about the relevant enzyme peculiarities, such as its mechanism of action.

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Keywords

Nursing; Debridement; Nursing Care.

Introduction

Chronic wounds consist of injuries that have as characteristics a higher demand of time for scar development. The lesions may last years to the development of an effective healing process, presenting great

potential for recurrence, as well as the presence of specific cells of the chronic inflammatory process at the local of the injury, for example, differentiated macrophages and lymphocytes, which differentiates this type of wound from the others [1-2].

Chronic wounds such as neuropathic ulcers, pressure ulcers and venous ulcers, are lesions that have a high morbidity and mortality, resulting in longer hospital stays and negative impacts, both in the quality of life, as in health services due to high costs social and economic engaged in their treatment [3-4].

With the growing number of people who have lesions with these peculiarities, researchers and administrators in the health sector have shown interest to be involved in this theme, in view of the impact of these injuries on the lives of individuals and, of course, the high hospital costs which they require [3-4].

For the treatment of wounds, there is a wide variety of products in the market, which ultimately require rigorous evaluation of tissue injury occurs so that the selection of the most appropriate coverage aiming to reach the appropriate treatment [5]. Thus, it is important that occurs thorough evaluation of the lesion from its source, location, size of the lesion bed characteristics, such as types of tissue present (vitalized or not), signs of infection and the presence of cavities, in addition adjacent skin. Systemic and psychosocial character condition of the patient should also be taken into account in the evaluation time, such as nutritional status, comorbidities, age, medications used, financial and social conditions to cooperate for the treatment and health keeping [6]. This fact will ensure the nurse accurate and actual situational conditions about the injury and it may take care holistically based on resolving interventions.

In chronic wounds, in addition to the general characteristics evaluated, it is necessary to consider the peculiarities of this type of injury, since there is usually deficient endogenous collagenase production, leading to failure in the removal of devitali-

zed tissues. This particularity makes one of topical products of choice for the treatment is preferably collagenase [6].

Collagenase is a topical debriding substance that acts by means of an enzyme called Clostridiopeptidase A., which promotes the removal of devitalized tissues. To be routinely used by health professionals, especially nurses, it is necessary to have technical and scientific knowledge about this enzymatic debriding, because if used improperly it can make improper the formation of granulation tissue, and consequently delayed healing [3, 7-8].

For collagenase to be used properly and judiciously, there is a priority for the nursing professional, as well as to know about this product used to treat wounds, systematize this assistance, thus performing the steps of the nursing process through holistic and systematic evaluation the wound and the patient, thus enabling nurses to the construction and implementation of the treatment plan, monitoring, and documentation of results from the interventions, which will provide means for the attainment of its main objective included in the care process: the progression of injury, satisfying your customer [4, 6].

It is emphasized that currently the treatment of wounds is considered a multidisciplinary practice, which requires the joint efforts of health professionals, but is nursing more accurately the clinical nurse who is in charge of decision making inherent in the process of care wounds, as well as the choice of the dressing and the substances used in the evolution of the injury process [9].

Such a fact requires from nurses autonomy and quality of service performed, thus requiring responsibility and a broad knowledge from the professional. By the elucidated information, one can observe the importance of the role of nurses in all stages of the implementation process of care focused on the treatment of chronic skin lesions, but also the need for knowledge of all kinds of products used in the treatment these wounds, emphasizing collagenase,

as a cover for easy access to hospital services, one of the most used products in the clinical practice of nurses who treat chronic injuries.

Given the above, this study aimed to verify the skills of nurses regarding the use of collagenase in the treatment of chronic wounds.

Material and Method

This is a descriptive study of a qualitative approach, developed in the medical clinic of two hospitals in the city of João Pessoa – PB, during the months from September to December 2014. The selected hospitals named as Hospital A and Hospital B to anonymity of institutions were chosen for developing comprehensive care to people with chronic wounds, regardless of etiology, and for using the collagenase routinely, and quite often in the execution of dressing developed at both clinics, a fact that aroused interest in the study of the object.

The research population consisted of nurses working in the medical clinic of these hospitals. The sample behaved 14 nurses who met the following inclusion criteria: being a nurse, be in the Clinical Unit at the time of data collection, perform nursing care focused on the treatment of chronic wounds. They were used as exclusion criteria: nurses who were not present at the time of data collection and who did not perform the treatment of chronic wounds.

For data collection there was used a semi-structured script, applied as an interview with the active professional in the unit. The interview was recorded with the aid of an audio pickup device (MP3), and fully transcribed, opting for post-collection transcript so that the reliability of data could be preserved. Data collection was performed on the professional duty at a propitious time, not to interfere with the routine work of the study participant professional in preserved place.

Data analysis was given by the Content Analysis method, which consists of a thematic categori-

zation of the content itself inserted in the speech of the interviewee through systematic techniques. Methodological further based on the method is given by the analysis of the stages of content consisting of: pre-analysis of the data collected, the material exploitation and processing of the results [10].

For the research to be taken there were considered the provisions of the Resolution nº 466/12 of the National Health Council which deals with research involving humans in force in the country, this resolution provides for the application of the signature of the Consent and Informed completed by participants, as well as Resolution nº 311/2007, COFEN, which provides for the code of ethics of nursing professionals. The project was approved by the Ethics Committee on Research, according to CAAE 17913813.9.0000.5188.

Results

There were interviewed 14 nurses working in the Medical Clinic, 10 respondents belonging to the Hospital A and 4 to Hospital B. From these, 12 (86%) were female; 10 (71%) between 31-45 years old; 5 (35%) had more than ten years of professional experience; 8 (57%) professionals had between 1-5 years of experience in the treatment of wounds; only 1 (7%) was specialized in Dermatology Nursing, as shown in **Table 1**.

Table 1. Distribution of nurses participating in the study according to the demographic and professional data. João Pessoa, PB, Brazil, 2014.

Variables	N	%
Gender		
Female	12	86
Male	2	14
Age (years)		
18-25	1	8
26-30	-	

Variables	N	%
Age (years)		
31-45	10	71
46-50	3	21
> 50	-	-
Training time (years)		
<1	-	-
1-5	5	35
6-10	4	30
>10	5	35
Time of operation in the treatment of wounds (years)		
<1	-	-
1-5	8	57
6-10	6	43
>10	-	-
Post-graduation		
Specialization in Nursing	12	86
Specialization in Stomatherapy Dermatology	1	7
No specialization	1	7
Social Participation	1	7
Total	100	100

Regarding the perception of nurses in the use of collagenase during treatment of chronic wounds, after analysis of this content in the reports emerged the following categories:

1. Knowledge about the collagenase action mechanism in the treatment of chronic wounds;
2. Reasons for use and destruction collagenase in the treatment of chronic wounds.

1. Knowledge about the collagenase action mechanism in the treatment of chronic wounds

The category reports the knowledge of nurses in relation to collagenase mechanism of action, indicating that these professionals consider it a debriding operating principally in the removal of necrotic tissue. While they claim erroneously that the collagenase is an autolytic debriding, it is clear that nurses have reasonable understanding regarding this enzymatic debriding.

I define as an anti-necrosis product. Because every time I use collagenase in the treatment, I see that there is a very easy detachment of the necrotic tissue present in the wound. It is a very good ointment.

Nurse 1.

[...] It is an excellent non-selective debriding and autolytic. Now, of course not, every stage of the wound I'll be able to use it. It will "do" for a period there is well stressed necrotic tissue, then I use.

Nurse 2.

So, collagenase is an excellent autolytic debriding. It is present in our service and it is also used a lot here in the clinic. Of course, the only way we have is the form of ointment, and we, nurses, when we perform the bandages put it in the areas of necrosis, those darker, unviable tissue.

Nurse 4.

Collagenase is an autolytic debriding nonselective well-known [...] widely used in various places, especially in those where we have not so many financial conditions to acquire. Here, for example, it is widely used. I highly recommend the use to be a very good and also wonderful effect enzyme.

Nurse 5.

Besides considering collagenase as a strong debriding agent, nurses also believe that it acts enabling the wound, allowing the injury to be evaluated after the removal of the devitalized tissue, as well as other forms of treatment that can be used.

It will just remove the macerated tissue, slough, necrotic, to provide a possible healing and progression of injury, mainly from the wound bed. It enables our assessment.

Nurse 6.

[...] To help the debridement I use collagenase. It will act as a facilitator, because it acts faster [...] at certain stages of necrosis, but we have to know when to use it.

Nurse 7.

It acts very well and gives me subsidies to assess the injury of more precise and clear, much faster than some other enzyme. I like to use it.

Nurse 3.

If it works by removing and enabling [...] so that then we can start with other therapeutic practices [...] it acts so mainly very well even in treatment.

Nurse 10.

2. Reasons for use and destruction collagenase in the treatment of chronic wounds

When asked about the withdrawal of collagenase in the treatment of chronic wounds, nurses gave favorable and unfavorable reasons in relation to the use of said debriding.

Concerning the reasons for use of nurses they emphasized the importance of collagenase treatment as well as the knowledge regarding the debriding order to use it properly.

[...] It is still useful for coagulation necrosis of when seeking accelerate this debridement. It is useful, it is not necessary to remove it, unless the institution chooses to papain, for example, another enzyme, but we have to have an enzyme, is important. The task is not to forbid the use of collagenase, is know how to use.

Nurse 9.

[...] If you know what time you will use a product, you will not extinguish it its practice of its use. If you know when you should use it, I would not withdraw it.

Nurse 8.

[...] I do use collagenase to know that it can indeed be used when necessary, as well as the great importance that has debriding. I would not give it, because I see that the wound evolves well when used properly and with adequate precautions. The nurse has to know well the product to be able to enforce its use, and the collagenase is no different.

Nurse 10.

[...] When it refers to collagenase, I know it's a product that needs to be aware that the use is done correctly. In wounds that take a long time to heal, and that is necrosis, it is a great option. We use a lot here at the clinic, and the nurse knows there will be no problem, but rather a contribution to healing.

Nurse 11.

The reasons for destruction, nurses consider collagenase association to a no longer recommended antibiotic, the risk of achieving viable tissues, and dependence on prescription so it can be used.

In addition to have the associated antibiotic, chloramphenicol, and this longer be an antibiotic that is well surpassed almost not used anymore, and it has a very rapid debriding action sometimes affects viable tissue if we let long time.

Nurse 6.

[...] Collagenase should not be used more today, because we almost no longer use, and doctors need to prescribe for us to use, after all is a form of treatment, so I believe that we should not use it in daily life.

Nurse 5.

I prefer rather not to use, you first need the doctor who prescribe and it can achieve viable tissues. I do not use on their own exactly for these reasons, even though nursing is responsible for this function. I do not use, in spite of it exist here.

Nurse 14.

I think rather that it should be removed. You misuse, and when you use has to be under medical prescription, so I believe it is no longer serving. Furthermore, a substitution by another enzyme also cover would be feasible, but a lot depends on several factors, such as access and cost [...].

Nurse 12.

There are also professionals who do not feel able to issue a decision-making position in this regard, justifying not know how to respond to questions and also ignore the cost/ benefit of other products.

I do not know, because there are many new substance, there are other products, cost/benefit, I believe I would have to do some research before answering, to be able to replace. I have no opinion on this question no.

Nurse 13.

I cannot comment about it because I do not work with regulatory manufacturers. If I had more accurate knowledge, I assure you that would position me. So I guess I cannot.

Nurse 12.

I think when you do not know you cannot give an opinion, isn't it? So, I am sincere in saying that I cannot contribute on this point, because I have no great safety to say something that might alienate the product of our practice, it is as viable for use.

Nurse 8.

I do not know how far I can argue about it, I'm not so sure to describe to you something, a decision-making within that scope. I say for sure that I cannot answer.

Nurse 14.

Discussion

The term comes from the French "débrider" which means "to give free rein to" and was introduced by Pierre Joseph Desault in the late 1700s, to treat wounds of war and noted that there were better healing when performed debridement. This technique has several benefits for healing because it allows better evaluation of the wound, reduces the potential for infection by reducing the load of microorganisms, removing biofilms and activating cell activity by removing physical barriers to the fully devitalized necrotic tissue. This fact is explained as the necrotic tissue leads to the release of endotoxins that inhibit keratinocyte activity, and fibroblast decreases the presence of senescent cells with less protein, and less ability to proliferate, negatively influencing the activity of tissue growth factor [11-12].

The debridement technique can be performed by means of three types: mechanical or surgical debridement, consisting of a practical removal of necrotic tissue using instruments such as scalpel and curette; autolytic debridement comprising a selective removal process of necrotic cells due to the action of digestive enzymes and endogenous being primarily developed from covers that leave the wet lesion bed, thus facilitating the arrival of cells in the scar region; enzymatic or chemical debridement, which is based on the use of degrading substances, such as enzymes which digest the necrotic tissue, thus facilitating the healing process and progression of wound [7, 13].

Collagenase is an enzyme agent used for the hydrolytic cleavage of collagen molecules, which are the main components those adhere non-viable tissue in the wound bed [15]. The specific proteolytic activity of collagenase was isolated in 1950 by pioneers of Bioscience: Mandl, Seifter, Harper and their colleagues, and demonstrated the breakdown of collagen while maintaining the integrity of viable tissue in wounds [6]. What goes against the assertion of some nurses, as they consider collagenase as a non-selective and autolytic debriding?

Concerning the action of collagenase, most speeches revealed that it acts mainly necrotic tissue, showing adequate knowledge of nurses, as the literature states that debriding provides cleaning injury by removal of devitalized tissue (necrosis) and crusting formed [9].

One benefit of collagenase highlighted by nurses and supported by the literature, comprise the best conditions for evaluation of the wound after use of such debriding, since the enzymes topical digest and dissolve the devitalized tissue, enabling the wound and allowing viable tissues make it visible to the nurse, assisting in choosing treatments that promote the healing process [14].

Regarding the reasons for the use of collagenase, it is emphasized that nurses justified its use by having knowledge in relation to its mechanism of action as enzymatic debriding, and that its use becomes an important tool for the treatment of the wound. The care of people with wounds requires technical-scientific knowledge, with skill and integral vision to the patient, which is a need identified by own account of the participating nurses, when they express the importance of recognizing how to use the enzymatic debriding the care of the patient affected by this injury [15].

Concerning the non-use of collagenase, the speeches of nurses refer to not use the ointment because of association with antibiotic chloramphenicol, and use restricted to prescription.

The association of collagenase with chloramphenicol, it is emphasized that this is a bacteriostatic antibiotic of broad spectrum used to tackle local bacterial infections, low evidence of acquired resistance. However, recognition of toxic effects that can cause serious damage to health as the gray baby syndrome and aplastic anemia, as well as the emergence of new, more effective and less toxic drugs, eventually restricting its use [17, 18]; while topical use of antibiotics that do not expose the risks of destruction mentioned in the speeches justified by decreased collagenase production Chloramphenicol with the pharmaceutical industry.

Nurses also reported dependence on prescription as a barrier to not use collagenase; however, the Regional Councils of São Paulo Nursing and the Federal District, after analysis of the legislation, say the technical trained nurse and scientifically has legal support and autonomy to prescribe covers/related and topical therapy as institutional protocols or health body [19, 20].

In addition to the lack of knowledge regarding the legislation governing the profession and guaranteeing autonomy in the treatment of wounds, some nurses also showed uncertainty in positioning with respect to decisions regarding the use of that type of topical debriding treatment, not being able to issue opinion on its usefulness.

This may be a result of little or no workload for the treatment of wounds during the training of nurses, which reflects the lack of knowledge and/or even interest in wound care, since they were not motivated at the time of learning. This fact is reported in studies that show a lack of knowledge of nursing students regarding the treatment of wounds, which can result in care not based on scientific evidence, compromising the quality of nursing care for people with chronic wounds [5, 16].

Conclusion

The study showed that nurses have knowledge that collagenase is an enzyme debriding that aids in the healing process, especially removing the necrotic tissue in chronic wounds. However, these professionals have superficial knowledge regarding the use of this debriding with deficit especially in relation to its mechanism of action, which could end up enhancing the delay in the healing of chronic wounds.

Thus, understanding that the nurse is primarily responsible for the treatment of wounds highlights the need to improve for the care of wounds systematized and updated, ensuring the quality of care.

For this, it is essential that health services invest in continuing education activities, seeking to intervene in the needs identified from the health professionals

themselves, as well as the educational institutions extend the hours for the treatment of wounds, so that nurses possess adequate technical and scientific skills to exercise care that is inherent in their profession.

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