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A systematic review study on the most important treatment strategies for diabetic foot ulcer

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Abstract

Introduction: Diabetic foot is one of the complications of diabetes in diabetic patients with various muscular and neuropathic musculoskeletal disorders and circulatory disorders, which also has a high incidence of diabetic patients with foot lesions. These foot ulcers are frequently infected with diabetic patients and have potential for cellulite progression, sometimes leading to amputation. Therefore, considering the importance of diabetic foot ulcer treatment in diabetic patients, this systematic review was conducted on the most important therapeutic strategies for diabetic foot ulcers. **Materials and Methods:** In this systematic review, this integrated overview study was conducted based on the Broome method in order to achieve the goal of the study and to improve the study's thorough understanding and comprehension. This method is carried out in three stages of the search of texts, data evaluation and data analysis, so that in the search stage, the texts of post-retrospective studies are examined in four stages in terms of inclusion criteria. After obtaining the conditions for entry into the study, the content of the study is evaluated, and at the end of the analysis of the data. **Results:** In this study, several methods for the treatment of diabetic foot ulcers have been investigated. One of these studies was red light radiation of nm660 to the wound and 980 nm infrared around the wound and red invertebrates with infrared lasers to some acupuncture points for 5 to 10 days and then 2 times a week until complete recovery ulcers have been repairing these ulcers. **Conclusion:** In this study, as stated above, our goal is to examine the most important therapeutic methods for diabetic foot ulcers, which the results of various studies have shown that there are several therapeutic methods for treating diabetic foot ulcers. It is advisable to take serious measures to control the patient's blood sugar, which causes the recurrence of foot ulcer infection and ultimately requires serious treatment.

Keywords: Diabetes, Foot ulcer repair, Diabetic patients, Treatment strategies.

Introduction

Diabetes is one of the most common diseases around the world, and even in people who appear to be healthy, diabetes can be diagnosed. It is a metabolic disorder characterized by increased blood glucose and due to insufficiency or secretion of insulin or both, and due to an increase in the number of people with the disease, it is a major public health problem in the world, especially in Asia has become [1-6].

According to the International Federation for Diabetes, the disease has already affected 371 million people around the world, and 187 million are not even aware of this. The WHO also estimates that by the year 2030, the number of people with diabetes will more than double. Over the past decade, the number of people with diabetes in the United States has experienced an increase of approximately 50%, reaching 29 million or 9.3% of the country's population [7-12], with multiple short-term and long-term complications Which in many cases is not reversible [13,14]. Among diabetic patients, depression is one of the most common psychiatric disorders [15]. Depression is one of the most common and debilitating problems for youth and adolescents. [16,17], diabetes is one of the most

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common endocrine complications in thalassemic patients [18], thalassemia is one of the hereditary diseases, with an estimated annual incidence of symptomatic cases of this disease, estimated at one hundred thousand around the world [19-24].

Diabetic foot is one of the complications of diabetes in diabetic patients with various muscular and neuropathic musculoskeletal disorders and circulatory disorders, which also has a high incidence of diabetic patients with foot lesions. These foot ulcers are frequently infected with diabetic patients and have potential for cellulite progression, sometimes leading to amputation [18-29]. Therefore, considering the importance of diabetic foot ulcer treatment in diabetic patients, this systematic review was conducted on the most important therapeutic strategies for diabetic foot ulcers.

Materials and Methods

In this systematic review, this integrated overview study was conducted based on the Broome method in order to achieve the goal of the study and to improve the study's thorough understanding and comprehension. This method is carried out in three stages of the search of texts, data evaluation and data analysis, so that in the search stage, the texts of post-retrospective studies are examined in four stages in terms of inclusion criteria. After obtaining the conditions for entry into the study, the content of the study is evaluated, and at the end of the analysis of the data.

The present study is a systematic review article that was conducted in English and Persian by searching articles in search engines, scholar, Embase, Scencedirect, PubMed, Springer's reputable scientific sites and databases. Using the articles published in the last 25 years, it was based on the most important treatments for diabetic foot ulcers. In the first stage, 41 papers were found. Of these, 12 articles related to the topic that were published in the last 25 years were reviewed.

The studies studied were written in English or Persian, access to their full text was possible, that entered the study, and unnamed and non-academic studies were deleted. To achieve relevant studies, a wide range of keywords including diabetes, foot ulcer repair, diabetic patients and treatment strategies was used as a one-to-one search, combined with the method "And" and "OR".

Results

In this study, we intend to examine the most important treatments by reviewing 12 articles on effective treatments for diabetic foot ulcers.

In this study, 35 patients with platelet gel and 35 subjects received routine treatment to determine the effect of platelet gel in the treatment of diabetic foot ulcers. Both groups received intravenous antibiotics during the course of treatment, patients Three weeks were evaluated, the basis for the response to treatment, the formation of visible and readily graft tissue, or epithelization. There was no indication of amputation in the platelet gel treatment group. In the control group, foot ulcer in 6 patients resulted in limb amputation. [25]. In another study, laser therapy was performed for 12 sessions during a 4-week low-power laser gallium, aluminum. Low-level laser radiation is non-contact on the surface of the lesions, changes in the area of lesions as the main outcome after treatment and up to the fourth month of follow-up were evaluated [26]. Also, in a study that aimed to determine the effect of compressive-suction treatment (VCT) on foot ulcer healing in diabetic patients, the decrease in the mean area of the wound surface after treatment in the experimental group was higher than that of the control group, and as a result, when the treatment Compressive suction with the appropriate care of the foot ulcer will increase the repair of the diabetic foot ulcer [27].

In another study, in the treatment of chronic ulcers of grade 3 diabetes mellitus based on Wegener's classification, ultrasound waves of low frequency with standard care of the wound compared with standard care from scarring alone initially caused Accelerated recovery of chronic diabetic foot ulcers especially in the second and third months, while after 6 months of follow up, there was no significant difference in wound healing [28]. Also, in a study that was done, the patient was advised to wash the wound completely with the serum first, then place the mixture on a sterile gas and place on the scar and place the dressing every 24 hours, after which Five days after the start of treatment, granulation tissue was developed in the wound and the wound was completely recovered within a month [29].

Also, in a post-visit study, penicillin powder and rinse with betadine were stopped and treated as daily dressing with topical mixture of heat-treated lambs in olive oil and animal oils, And the patient was advised to wash her wounds before dressing with the serum, then place the topical mixture on a sterile gas and place on the wound, and the dressing would be changed every 12 hours, After a week after starting treatment,

the new tissue was observed in the wound and the ulcer was completely closed within 2 weeks [30].

In another study, red light radiation of 660 nm to the wound base and infrared 980 nm around the wound and red intravenous light with infrared laser to some acupuncture points for 5 to 10 days a day and then 2 times a week until complete recovery. Wounds have been repairing these wounds [31]. In another study, immersion ultrasound was debrided to necrotic tissue and the wound surface decreased and granulation tissue increased and wound healing improved without scar formation and Slough [32]. Another way to treat foot ulcers is to use an air cast diabetic walker boot that inflates the air bag inside the boot to reduce stress on the skin, has a hard outer cover and a deep heel that lowers the pressure [33].

Apligraf is another method that replaces the two-layer human skin that is used to treat intra venous ulcers and diabetic foot ulcers [34]. In a clinical trial, tretinoin 0.5% solution for 10 minutes daily followed by gel iodine for 4 weeks was effective in wound healing than control group [35]. Other study findings showed that a course of endurance and cold plasma exercises also had a significant effect on wound healing in diabetic rats, which is the first time that endurance and cold plasma therapy was used to improve diabetes mellitus and these two together significantly accelerated wound healing in diabetic rats [36].

Discussion

Diabetic foot is one of the complications of diabetes in diabetic patients with various muscular and neuropathic musculoskeletal disorders and circulatory disorders, which also has a high incidence of diabetic patients with foot lesions. These foot ulcers are frequently infected with diabetic patients and have potential for cellulite progression, sometimes leading to amputation. Therefore, considering the importance of diabetic foot ulcer treatment in diabetic patients, this systematic review was conducted on the most important therapeutic strategies for diabetic foot ulcers.

In a study to determine the effect of platelet gel in the treatment of diabetic foot ulcers, it can generally be concluded that this study showed that platelet gel dressing was effective in the treatment of diabetic foot ulcer [25]. The standard treatment for diabetic ulcers involves topical and systemic measures, including delivering proper blood glucose, debridement, wet dressing, nutritional support, antibiotic treatment and ultimately surgery. New generation therapies for

accelerating wound healing, including hyperthermia oxygen, contender, human dander, electrical stimulation and growth factors are a platelet-derived growth factor [37-39].

According to study [30], the use of penicillin powder and rinse with betadine was started as a daily dressing with topical mixture of heat-treated lambs in olive oil and animal oils, and it was recommended to the patient. It can be said that the heat-treated wax lamb inside olive oil and animal oil is suitable for the treatment of diabetic foot ulcers. Also, the study showed that laser therapy can be effective in accelerating the healing of diabetic ulcers [26]. The laser operates in a number of mechanisms, in the first stage, vasodilatation enhances blood circulation in the region, helps to strengthen the immune system by destroying microorganisms in infectious wounds, and ultimately by strengthening the tissue repair process. It promotes wound healing.

Another study aimed to determine the effect of compressive-suction treatment (VCT) on foot ulcer healing in diabetic patients, which according to the results suggests that patients with diabetic foot ulcers and chronic ulcers without improvement, for wound healing and limb restoration. Use the most sophisticated pressure-saving treatment [27]. In one study, with the aim of reporting a case of diabetic foot ulcer treatment with topical administration of honey and olive oil, after 5 days of treatment, granulation tissue was developed in the wound and the ulcer was completely improved within a month [29].

Conclusion

In this study, as stated above, our goal is to examine the most important therapeutic methods for diabetic foot ulcers, which the results of various studies have shown that there are several therapeutic methods for treating diabetic foot ulcers. It is advisable to take serious measures to control the patient's blood sugar, which causes the recurrence of foot ulcer infection and ultimately requires serious treatment.

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