
SHORT COMMUNICATION

Treatment of pressure ulcers in hospitalized malnourished elderly patients supplemented with a nutritional product based on specific nutrients. Preliminary data

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ABSTRACT

Objective: To examine and assess the evolution of pressure ulcers in elderly patients supplemented with a dietetic product based on specific nutrients (W-care®).

Patients: Eleven patients with a mean age of 81±8.27 years (range 64-96 years) affected by pressure ulcers were enrolled in our study.

Methods: We used an assessment form that considered the site and the size of pressure ulcers, the US-National Pressure Ulcer Advisory Panel stage, the Braden scale, and the pressure ulcer characteristics at baseline (T0), after 7 days (T7), and after 14 days (T14).

Results: A statistically significant reduction ($p=0.018$) of the mean lesion areas at T0 and T14 was observed in our patients. Moreover, the stage of pressure ulcers decreased and there was an improvement in the wound bed and surrounding skin in addition to a reduction of exudate.

Conclusion: The preliminary data of our study demonstrated the efficacy of W-care®.

KEY WORDS: Pressure ulcers, Elderly, Malnutrition, Oral supplementation, Arginine

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INTRODUCTION

Pressure ulcers (PUs) are a major problem in medical, social and health care costs (1). They are often found in healthcare settings, including in relation to the increase in the average age of the hospitalized population and the presence of comorbidities. PUs are lesions of the skin and/or subcutaneous layers, usually located at a bony prominence as the effect of pressure or a combination of pressure, friction and shearing (2). Multiple risk factors may be involved in the onset of PUs: impaired mobility and bed

rest; impaired skin integrity; advanced age; poor nutritional status; factors linked to perfusion and oxygenation; body temperature; and general clinical conditions (2).

There is scientific evidence that malnutrition is related to the incidence and the severity of PUs and to the healing time (3, 4). Malnutrition is not only an energetic deficiency but also regards low protein supply and/or vitamin and mineral deficiency (5, 6). There are many nutritional markers associated with the risk of developing PUs. These include involuntary weight loss, protein-calorie malnutrition, dehydration, a low body mass index,

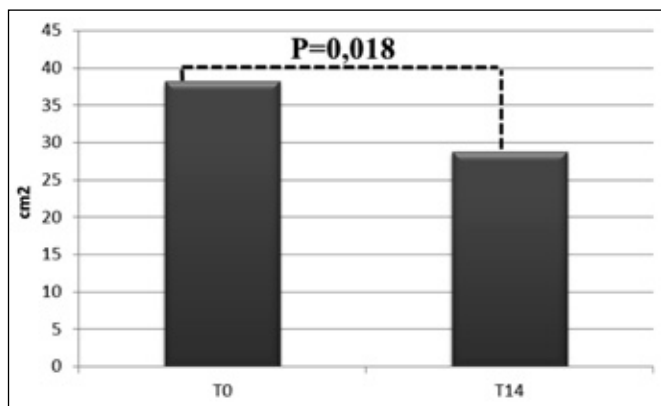


Fig. 1- Difference between mean lesion areas at T0 and T14.

reduced calorie intake, and reduced eating autonomy (7, 8). As malnutrition is a reversible risk factor for PU development, early recognition and treatment are very important to reduce the onset of lesions.

In the literature various studies have assessed the impact of nutritional support in patients at a high risk of developing PU, but there have been few studies investigating the effect of nutritional support in patients who already have skin ulcers (9, 10).

The aim of our study was to examine and assess, by means of specific parameters, the evolution of pressure ulcers in older patients supplemented with a dietetic product based on specific nutrients (W-care®) for the prevention and treatment of PUs. W-care® contains L-arginine, omega-3, vitamin C, collagen type II, zinc, vitamin E, vitamin A, vitamin B6, vitamin B1, vitamin K1, and vitamin B12. All these nutrients are useful to encourage the formation and maintenance of skin tissue and to counteract the damage caused by oxidative stress and free radicals (6, 9, 11, 12).

PATIENTS AND METHODS

In the period from March 2011 to July 2011, 13 patients of the geriatrics department of our hospital affected by PUs were enrolled in the study. Eleven eventually took part in it, while 2 patients dropped out (1 died and 1 had vascular injury). The patients were 6 women and 5 men with a mean age of 81 ± 8.27 years (range 64-96 years) admitted with fracture outcomes (5 patients), cerebral hemorrhage (1 patient) and cardiopulmonary diseases (5 patients). Informed consent was obtained from all patients.

We used an assessment form that considered the site and the size of PUs, the US National Pressure Ulcer Advisory Panel (NPUAP) stage (2, 13), the Braden scale for predicting pressure sore risk (14, 15), and the PU characteristics (wound bed, exudate, surrounding skin, presence of infection and pain). All patients were monitored at baseline (T0), after 7 days (T7) and after 14 days (T14). Photographic documentation was recorded for each time point.

We considered only the evolution of ulcers to the sacrum for the sake of sample homogeneity, although some patients had lesions at other sites including the heel (4 patients), back (1 patient) and trochanter (2 patients).

We assessed the nutritional status by nutritional intake estimates, weekly measurements of body weight and blood tests, and the Mini Nutritional Assessment Short-Form (MNA-SF) at T0 and T14 (16-18). In light of the nutritional screening, 4 patients were orally supplemented with protein-calorie supplements because the intake of diet alone did not satisfy the requirements.

All 11 patients received W-care® with dose adjustments according to the degree of ulcer: 1 bag/day in patients with stage I ulcers, 2 bags/day in patients with stage II ulcers, and 3 bags/day in patients with stage III and IV ulcers. One bag of W-care® contains L-arginine (2 g), omega-3 (500 mg), vitamin C (100 mg), collagen type II (100 mg), zinc (4 mg), vitamin E (4 mg), vitamin A (400 µg), vitamin B6 (0.4 mg), vitamin B1 (0.25 mg), vitamin K1 (15 µg), and vitamin B12 (0.05 µg).

Descriptive statistics were used to display the characteristics of the sample and the distribution of the applied scores. The difference between the mean lesion areas at T0 and T14 were analyzed using the paired Student's t-test. P values of 0.05 or less were accepted as statistically significant.

RESULTS

In the treatment period with W-care® we found a statistically significant reduction ($p=0.018$) of the mean lesion areas at T0 and T14 (Fig. 1). This was also evident when we considered for each patient the evolution of the lesion in time. Therefore the stage of PUs decreased (Fig. 2). In fact, the 63.7% of stage II and III lesions at baseline dropped to 18.2% after 2 weeks of treatment, with a parallel increase in stage I lesions (from 0.0% to 54.5%). Furthermore, considering the characteristics of PUs,

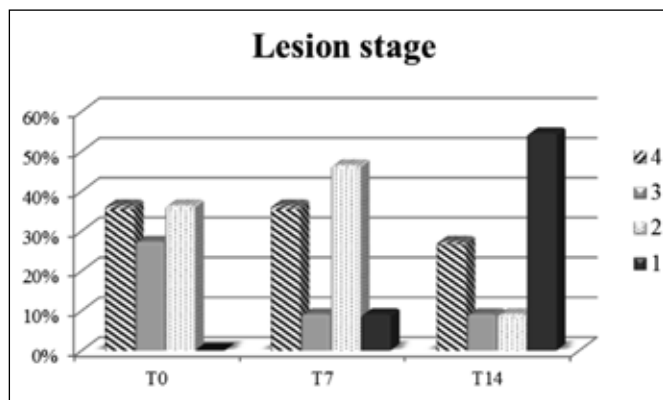


Fig. 2 - Distribution of lesion stages at different time points (T0, T7 and T14).

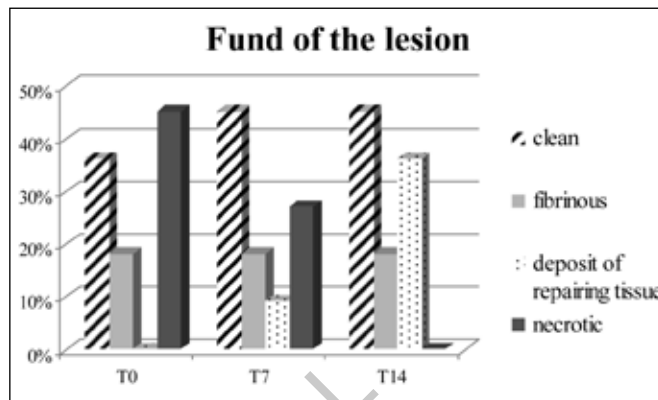


Fig. 3 - Distribution of tissue types in the wound bed at different time points.

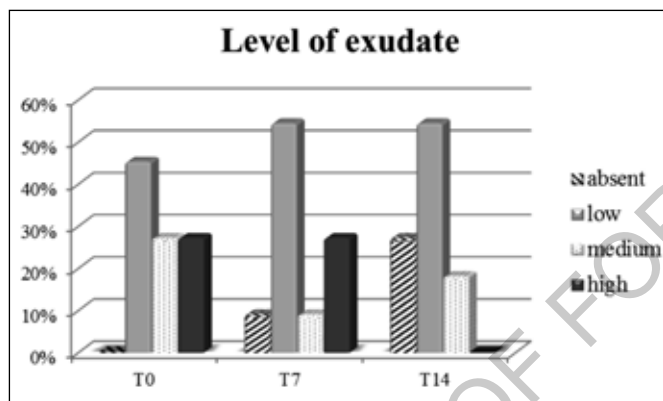


Fig. 4 - Distribution of exudate volumes at different time points.

there was an improvement in the wound bed (Fig. 3) and surrounding skin, in addition to a reduction of exudate (Fig. 4). These results are more evident when comparing the images of the lesions before and after treatment. Blood tests performed during the study showed no statistically significant changes.

Regarding the nutritional status, assessment with MNA-SF at baseline identified 7 malnourished patients (63.7%) and 4 at risk of malnutrition (36.4%); at the end of the study 6 patients were malnourished (54.5%) and 5 (45.5%) at risk of malnutrition. Instead, the weekly measurement of body weight showed no change or a statistically nonsignificant increase.

The level of compliance was very high (no dropouts for non-compliance) thanks to the formulation of W-care® and its easy mode of administration.

DISCUSSION

Although a cause-effect relationship has never really been defined, the presence of PU is frequently shown in partnership with a condition of malnutrition. The demonstration that a nutritional approach can lead to an improvement in the nutritional condition in association with a quicker healing process could indirectly support the importance of considering this therapy as one of the hinges of the cure process (2, 7, 19, 20). In fact, as early as 2000 a randomized controlled trial (21) reported that the use of nutritional supplements can contribute to preventing the development of PUs; the study has been regularly mentioned and cited by other authors since (20, 22). Moreover, Heyman et al (23), based on monitoring and measuring the area of the lesions, demonstrated that the use of specific hyperproteic and hypercaloric oral supplements for the treatment of PUs brings about an improvement. The results of our study confirm the literature data. In fact, the use of W-care®, a supplement containing specific nutrients able to stimulate tissue repair (arginine, zinc and vitamins), resulted in a significant reduction of lesion areas and a decrease in stage II and III lesions with a parallel increase in stage I lesions. Moreover, our patients had an improvement of PU characteristics, especially the wound bed and surrounding skin. In conclusion, we demonstrated that, in addition to the prevention and treatment of malnutrition, nutritional support must be part of a holistic approach adopted for patients with PUs (20). These findings substantiate the information already available in the literature and point to the need for additional, more extensive investigations to confirm the efficacy of this dietetic product.

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