The impact of compression therapy with Unna’s boot on the functional status of VLU patients

- **Objective:** to assess disability in patients with venous leg ulcers treated with compression therapy with Unna’s boot.
- **Method:** A descriptive analytic case-control study was conducted from June 2010 to May 2011 in an outpatient wound care clinic in interior Brazil. Fifty patients of both sexes, aged 18 years or above, who had had a venous leg ulcer for more than one year and a Doppler ankle-brachial index of 0.8–1.0 were selected for the study. Patients were treated with wound dressings and Unna’s boot. Disability was assessed using the 20-item Stanford Health Assessment Disability Scale (HAQ–20). Statistical analysis was performed using Student’s t-test, the Kruskal-Wallis test and chi-square test of independence, all at a significance level of 0.05 (p<0.05).
- **Results:** The mean overall HAQ score at inclusion (baseline) was 2.98, indicating impaired functional capacity. After eight and 12 months of compression treatment with Unna’s boot, the mean overall HAQ scores were 1.35 and 1.0, respectively, indicating good functional capacity.
- **Conclusion:** Patients with venous leg ulcer reported severe difficulty or serious disability in their daily functioning at baseline; after eight months of treatment with Unna’s boot these patients were able to perform activities of daily living.
- **Declaration of interest:** There were no external sources of funding for this study. The authors have no conflicts of interest to declare with regard to the manuscript of its contents.

Chronic leg ulcers are a public health problem that affect up to 5% of the adult population in occidental countries, causing a significant socioeconomic impact. Their aetiology is associated with a number of factors, including chronic venous disease, peripheral arterial disease (PAD), arterial hypertension, physical trauma, falciform anaemia, skin infections, inflammatory diseases, neoplasia and nutritional changes.1–5 The most common and important cause of leg ulcers is chronic venous insufficiency, followed by arterial disease, which are responsible for 10%–25% of all leg ulcers and may be associated with venous disease. Venous ulcers are the most common ulcers, accounting for 80% of leg ulcers with overall prevalences ranging from 0.6% to 3.6%.3

Patients who have had chronic venous leg ulcers for a long time experience difficulties involving several aspects of life, including pain, the presence of exudate and foul odour, and functional impairment. These life changes may result in isolation from family members and friends, reduced quality of life, low self-esteem and self-concept, and depression. Because the presence of an ulcer can be noticed by other people, having an ulcer may limit social interaction. Any change that affects the appearance of the body and makes an individual different from others may cause significant emotional distress.3

Functional capacity is a broad concept that involves the abilities to perform physical tasks and maintain cognitive functioning and adequate social interaction.6 Patients with venous leg ulcers experience lack of functional capacity in the form of impaired mobility and decrease in their ability to perform daily activities.7

Functional disability has been defined as difficulty in performing daily living activities due to a deficiency. Practitioners work with the concept of functional capacity/disability, even thought it is a broad concept.8

The study of functional status has contributed to the understanding of the extent to which the health status of patients with venous leg ulcers changes with age. Multiple comorbid diseases have different levels of severity and interfere with daily life.9 In this perspective, functional status has been considered an important indicator of the health/disease process.10,11

The assessment of functional status can provide relevant information to assist in the care of patients with venous leg ulcers. The aim of this study was to assess disability and pain in patients with venous leg ulcers treated with compression therapy with Unna’s boot.
Method

This was a descriptive analytic case-control study conducted from June 2010 to May 2011. The study was based on a convenience sample. Patients were consecutively selected in an outpatient wound care clinic in the interior of the state of São Paulo, Brazil. Fifty patients of both sexes, aged 18 years or above, who had had venous leg ulcer for more than one year and Doppler ankle-brachial index in the 0.8–1.0 range participated in the study. All patients were treated with wound dressings and Unna’s boot. The dressings were chosen according to stage of healing, level of exudate and amount of necrotic tissue. Patients were assessed for disability at inclusion (baseline) and at four, eight and 12 months of treatment.

Two instruments were used for data collection: a questionnaire assessing sociodemographic and clinical characteristics of the patients; and the validated Brazilian-Portuguese version of the Stanford Health Assessment Questionnaire Disability Scale (HAQ–20) assessing disability.12,13 The HAQ–20 contains 20 items grouped into eight categories: dressing and grooming, arising, eating, walking, hygiene, reach, grip, activities.

For each item, there is a four-point Likert scale scored from 0 to 3. The eight category scores are averaged into an overall score on a scale from 0 (no disability) to 0.830 (inter-rater reliability), which are correlation coefficients were 2.905 (intra-rater reliability), ranging from 0.501 to 0.793 (Pearson’s correlation coefficient) and inter-rater reliability values ranging between 0.599 and 0.779. For the overall score, the correlation coefficients were 2.905 (intra-rater reliability) and 0.830 (inter-rater reliability), which are considered clinically satisfactory.11 The instrument was validated by correlation with other variables.

Ethical considerations

The study was approved by the research ethics committee of the Federal University of São Paulo, Brazil (approval number 0650/10). It was conducted in accordance with the ethical guidelines of the 1975 Declaration of Helsinki and its subsequent revisions. Written informed consent was obtained from all patients before to their inclusion in the study.

Statistical analysis

Statistical analysis was performed using the Student’s t-test, the Kruskal-Wallis test and chi-square test of independence. All statistical tests were performed at a significance level of 0.05 (p<0.05).

Results

Of the 50 participants, 26 (52%) were female, 33 (66%) were older than 60 years and 33 (66%) were retired, with significant differences between age groups and occupation status (Table 1).

The mean overall HAQ score at inclusion (baseline) was 2.98±0.50, indicating severe difficulty or serious disability in their daily functioning. This fell to 2.47±0.30 after four months. After eight and 12 months of compression treatment with Unna’s boot, the mean overall HAQ scores were 1.35±0.23 and 1.0±0.21, respectively, indicating improvement in overall functional status with significant differences from baseline at all times.

The mean scores on all HAQ–20 categories are listed in Tables 3 and 4. Baseline scores were high on all HAQ–20 categories. A significant decrease in the mean scores on all subscales was observed at eight and 12 months after treatment with Unna’s boot, showing that the treatment improved the functional capacity of patients.

Discussion

Chronic wounds have a negative impact on patients’ quality of life, self-esteem and self-image, as well as on their family and social life, and on public health systems worldwide. In the US, chronic wounds cost more than US$5 billion annually, including costs of treatment and formal and informal caring, not including the emotional costs associated with the presence of a non-healing ulcer.14 The emotional effects of a chronic wound are particularly pronounced in older patients, who comprise the majority of this population.14 Population aging, a phenomenon initially observed in industrialised countries, has become a global issue that also now affects developing countries such as Brazil. This demographic change alters in the economic and social structure and health service needs, generating new demands on public services. This especially

Table 1. Demographic characteristics of patients treated with compression therapy with Unna’s boot

<table>
<thead>
<tr>
<th>Variable Control group (n)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>50</td>
</tr>
<tr>
<td>Age group (years)</td>
<td></td>
</tr>
<tr>
<td>20–40</td>
<td>2 (4.0%)</td>
</tr>
<tr>
<td>41–60</td>
<td>15 (30%)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>33 (66%)</td>
</tr>
<tr>
<td>Women/men</td>
<td>26/24 (52%/48%)</td>
</tr>
<tr>
<td>Occupational status</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>33 (66%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>13 (26%)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (8.0%)</td>
</tr>
</tbody>
</table>

* Chi-squared test of independence; p<0.05 considered significant

References

6 Nunes, MDR., Dupas, G., Ferreira, NMLA. Diabetes in childhood [AQ1 should this be childhood/adolescence?]: understanding the family dynamic. Rev Eletr Enferm. 2007; 9, 119–130.
12 Bruce, B., Fries, JF. The Health Assessment
includes the provision of long-term care for older people whose ability to perform activities of daily living is limited or whose families are financially, physically or emotionally unable to take care of them. As people age, they may experience difficulties in mobility and in performing daily living activities. This can make them feel powerless. In addition, older people may lack family and social support; they may be seen as unproductive and may therefore be rejected by the family and end up living in long-term care facilities or sheltered accommodation.

Brazilian and international studies have reported that venous leg ulcers are more common in people aged over 61 years and have a higher incidence in women than in men. Female hormones and pregnancy may lead to venous insufficiency, which may explain the higher incidence of venous leg ulcers in women.

Venous leg ulcers negatively affect patients’ lifestyles, quality of life, social functioning, family life, leisure activities and work productivity, and may result in early retirement. They also have a financial impact on patients and their family members who need to spend time, energy and money to care for them. Several studies have reported that patients with venous leg ulcers have impaired quality of life, physical and social functioning, and mobility, as well as difficulty in performing daily living activities.

In our study, the overall HAQ score was high at baseline and low eight months after treatment with Unna’s boot, indicating an increase in patients’ overall functional status. They had reported high scores on all HAQ–20 categories (dressing and grooming, arising, eating, walking, hygiene, reach, grip and activities) at baseline, which reflected the severe difficulty they had in performing these tasks. A significant decrease in the mean scores on all sub-scales was observed eight months after compression treatment with Unna’s boot, showing that the treatment improved physical functioning. These results are in agreement with those of a previous study.

Difficulties in the ability to perform mental and physical activities necessary to maintain basic daily living activities, such as bathing, dressing, performing personal hygiene, household tasks, preparing meals, taking medicine, buying groceries, and taking collective transport, are defined as functional disability. This leads to progressive social isolation, inability for self-care, loss of self-esteem and a lower quality of life.

The increase in life expectancy has led to an increasing number of older patients with long-term conditions. Bearing in mind that functional capacity decreases with age, the development of strategies to improve the lifestyle of older people, regardless of whether they have a chronic wound, is necessary. This may include interventions to improve muscle strength and the range of motion in joints combined with ulcer treatment, and to promote social integration with family and community, as well as the development of an adequate support system for older patients with chronic wounds. These actions could improve the autonomy and function capacity of this population.

This study emphasises the need to focus on the health of patients with venous leg ulcers and the importance for practitioners in public health services, hospitals, outpatient clinics and family health centres to identify changes in the physical and emotional functioning of these patients.

Training and qualifications should ensure that practitioners value both the technical aspects and the humanisation of care.

The search for prophylactic and therapeutic methods for treating venous leg ulcers is of fundamental importance. Practitioners should be familiar with the different types of products available that can be used as primary wound dressings, including those for patients with venous leg ulcers receiving compression treatment using Unna’s boot, single-layered bandages or multi-layered bandages.

Our study shows positive results of compression treatment with Unna’s boot, which reduced pain and treatment time and improved quality of life.
self-esteem and functional status for patients with venous leg ulcers.

Conclusion
In our study, compression therapy with Unna’s boot resulted in significant improvements in the functional status of patients with venous leg ulcers, in their ability to perform daily living activities after eight months of treatment.