

Therapeutic use of compression stockings for orthostatic hypotension: an assessment of patient and physician perspectives and practices

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Abstract

Background: elastic compression stockings (ECS) can be used as a non-pharmacological therapeutic option for older patients with orthostatic hypotension (OH). We aimed to investigate the practices and views of patients and physicians regarding the use of ECS for OH.

Methods: two surveys were designed. The first was sent to 90 patients known to have been prescribed ECS for OH. This questionnaire included items related to the frequency of use and issues related to non-compliance. The second was sent to 69 consultant physicians in geriatric medicine. This included items related to prescribing practices and perceived patient compliance.

Results: sixty-seven patients responded (response rate, 74%) and of those 64% were female. Mean age (SD) was 75.1 years (10.5), range 45–91 years. Thirty-three per cent wore ECS daily, whereas 43% never used them. Over half (51%) of the patients reported difficulty in application and 31% reported discomfort. Those aged 75 or older were more likely to report difficulty in application ($P = 0.003$). Forty-eight physicians responded (response rate, 70%). Eighty-nine per cent prescribe ECS for OH. There were significant differences between the frequency of use reported by patients and predicted by physicians ($P < 0.001$), with physicians less likely to predict daily or non-use. Eighty-nine per cent of physicians predicted that difficulty in application was the main reason for non-compliance.

Conclusion: although prescribed frequently, the use of ECS in patients with OH is often limited by issues related to practicality. Physicians correctly predicted the main reasons for non-compliance although underestimated the scale of patient compliance with ECS.

Keywords: orthostatic hypotension, elastic compression stockings, patient survey, physician survey, older people

Introduction

Orthostatic hypotension (OH) is a common problem in older people with a prevalence of 23–50% [1, 2]. OH is associated with an increase in falls, stroke, cardiovascular disease, cognitive impairment and mortality [3–8]. Management often poses difficult challenges with a limited evidence base to guide practice. A recent systematic review has questioned the quality of evidence supporting the use of pharmacological

agents [9]. Non-pharmacological measures form an important aspect of therapeutic intervention in this group. Up to 700 ml of blood can translocate into the lower limbs following several minutes of standing [10]. The rationale for using graduated compression garments is to apply external counter-pressure to the lower limbs or abdomen with the effect of reducing venous pooling and capillary filtration resulting in increased venous return [11]. Short-term improvements in orthostatic blood pressures with garments applying counter-pressure to

lower limbs have been demonstrated [12]. Garments that compress the abdomen have shown greater promise in attenuating blood pressure reductions [13].

In clinical practice, older patients with OH who use elastic compression stockings (ECS) often report practical difficulties which may limit their potential benefit. There has been no study to date that has evaluated these potential issues. In view of this, two surveys were conducted. The first was a survey of patients with OH known to have been prescribed ECS. The patient survey aimed to assess compliance levels and explore reasons for non-compliance. A secondary objective was to record effect of ECS on symptoms. A second survey was undertaken by consultant physicians in geriatric medicine who would frequently be involved in managing older patients with OH. The aims of the physician survey were to assess their prescribing practices and views regarding the usage of ECS. We were also interested in measuring the degree of consensus between physician and patient responses.

Methods

Questionnaire design and piloting was performed based on published guidance [14] and previous work investigating compliance levels of ECS post lower limb venous thrombosis [15, 16]. Using a panel of consultant physicians in geriatric medicine and senior nurse specialists, we developed both questionnaires to assess key themes outlined above using single choice answer or Likert scale where possible.

The patient survey was a postal questionnaire printed on coloured paper with return postage prepaid sent to 90 community-dwelling patients with OH who were prescribed ECS. OH was defined as a drop in systolic BP of 20 mmHg and diastolic BP of 10 mmHg within 3 min of orthostatic stress by tilt table testing or active stand [17]. Baseline characteristics including medical history and medication usage were recorded at the time of prescription of ECS in the clinical record (Supplementary data, Appendix S1 are available in Age and Ageing online). The study group were randomly selected from a database maintained by staff in a regional syncope tertiary referral centre. Those with a history of cognitive impairment, previous lower limb venous thromboembolism, chronic venous insufficiency and those who had subsequently died were excluded. This survey included items relating to compliance, reasons for non-usage and perceived effect on symptoms. Patient responses were identifiable to enable characterisation. To encourage participation, a reminder letter was sent to those who did not respond after 3 weeks.

The second survey was administered electronically using an Internet-based survey package to 69 hospital-based consultant physicians in geriatric medicine in active clinical practice in the Republic of Ireland. In this anonymous survey, participants were asked questions relating to their own current practice of ECS prescription for OH. Items included preferences on size, strength, estimation of patient compliance and their views on potential reasons for non-

compliance. A reminder email was sent to all after 3 weeks. Ethical approval was granted by the local hospital ethics committee.

Statistical analysis

Descriptive statistics (means, proportions) were calculated for responses to both surveys. A χ^2 test was used to test for significant associations between categorical variables. Non-parametric tests were used to compare median number of medications and co-morbidities by the frequency of use. A 5% level of significance was used for all statistical tests. IBM SPSS for Windows (Version 20) was used for the analysis.

Results

Sixty-seven patients responded to the survey (response rate, 74%). Of the study group, 64% were female with mean age (SD) 75.1 years (11.5), range 45–91 years. Ninety-five per cent received their prescription for ECS. Dizziness was the most frequent indication (60%) followed by falls (43%). The frequency of usage and reasons for non-compliance as described by patients and estimated by physicians are summarised in Figures 1 and 2.

Those aged 75 or older were more likely to report difficulty in application compared with those under 75 ($P = 0.003$). Difficulty in application was more likely to be reported in those who used ECS rarely or never compared with regular or daily users ($P = 0.048$). More frequent use (regularly or every day) was associated with an improvement in symptoms compared with rare or no use ($P = 0.001$). Those who wore ECS regularly or daily had a median number of co-morbidities of 2 compared with 3 for those who never or rarely wore ECS ($P = 0.20$). Daily and regular users had a median number of medications of 5.5 compared with 7 for those who never or rarely wore them ($P = 0.07$). There was no association between the frequency of wear and prescription of midodrine for OH ($P = 0.84$) or between symptom improvement and usage of midodrine ($P = 0.20$).

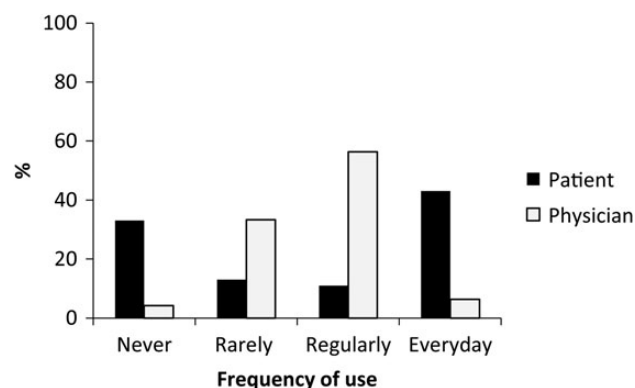


Figure 1. Patients ($n = 63$)* reported and physicians ($n = 48$) predicted compliance with ECS. *Missing data for 4 patients.

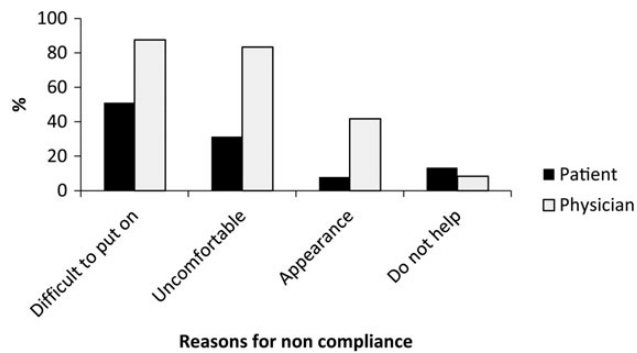


Figure 2. Patients ($n = 63$)* reported and physicians ($n = 48$) predicted reasons for non-compliance with ECS. *Missing data for 4 patients.

Forty-eight physicians responded (response rate, 70%). Eighty-nine per cent routinely prescribe ECS for OH while 48% feel they are of benefit. Sixty-seven per cent prescribe ECS before commencing pharmacological therapy, 16% concurrently with 16% following a trial of drug treatment. Sixty-nine per cent of physicians choose thigh length with 46% preferring class 2 and 22% class 1. There were significant differences between the frequency of use reported by patients and estimated by physicians ($P < 0.001$).

Discussion

Our patient survey revealed that only one third wore ECS daily while over half used them rarely or never, indicating that patients seem either largely committed to ECS or not at all. In two surveys of patients prescribed ECS post lower limb thromboembolism, daily compliance rates ranged between 74 and 87% (mean age 61 years in latter study) [15, 16]. In those with chronic venous insufficiency, 21% wore ECS daily (median age 58 years) [18]. It has been suggested that older people are more inclined to comply with pharmacological treatments [19, 20]; however, associated physical disability results in lower rates [21]. In this study, older patients were significantly more likely to describe practical difficulties with ECS, limiting their use. Perceived benefit from therapeutic intervention has been shown to positively influence patient compliance [22, 23]. The majority of regular or daily users reported an improvement in symptoms which appears to encourage their use. It is interesting that those who were also prescribed pharmacological therapy for OH were no more likely to use ECS more frequently. Midodrine has been found to improve orthostatic symptoms in a small study; however, long-term effect on patient symptoms is unclear [24].

Our physician survey has several relevant findings. The majority of physicians prescribed ECS for OH; however, less than half describe them as of benefit. This disparity between physician views and prescribing practices may be related to the lack of robust evidence supporting the role of ECS in managing OH. Most prescribe ECS before pharmacological

therapy which indicates a preference for the initial trial of more conservative measures which is understandable in this patient group. Physicians correctly identified the main reasons for non-compliance which may reflect issues encountered in their clinical practice. Daily and non-usage rates were underestimated. This is not surprising as it has been shown that physicians are inaccurate estimators of patient compliance [25, 26]. Adherence to a particular treatment is influenced by patient attitudes which are usually initiated in the medical consultation. [27]. Effective communication between physicians and patients may improve physicians' ability to predict non-adherence [28]. This may be particularly important when counselling regarding the practicalities of ECS to an older population with higher co-morbidity.

We believe our results provide useful information to physicians who prescribe ECS for OH. The patient study group were a well-characterised, community-based population. The response rates for both surveys were high, improving the applicability of results. This study has several limitations. The physicians surveyed were specialists in this subject, and the patients included were sampled from a tertiary referral centre for syncope assessment. This may not be representative of the population as a whole. Clinicians in non-specialist units with varying levels of experience managing similar patients may have differing views. Although the majority of the patients included were under active follow-up by the clinical service, some were subsequently discharged, which may have resulted in lower compliance rates in this group. We did not have available data on the magnitude or pattern of orthostatic blood pressure decrease from time of diagnosis of OH which may be interesting in future studies to explore associations of compliance with ECS. In conclusion, ECS are prescribed frequently in those with OH; however, their use is often limited by issues related to practicality. Significant differences exist between physician's estimated compliance rates and actual patient usage.

Key points

- ECS are prescribed by most physicians who treat older patients with OH.
- One-third of patients wear ECS daily with issues related to practicality limiting compliance.
- There is a significant discrepancy between physician's predicted compliance rates and actual patient usage.

Conflicts of interest

None declared.

Supplementary data

Supplementary data mentioned in the text are available to subscribers in *Age and Ageing* online.

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