Compression after sclerotherapy with liquid and foamed agents

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Keywords
Compression, sclerotherapy, compression stockings, duration of compression

Summary
Introduction: Compression therapy is one of the cornerstones of phlebology treatment. We know from a survey of German phlebologists that about 30% of patients are treated with compression stockings after sclerotherapy.
Methodology: We undertook a systematic search of the literature in Medline, PubMed Central and Embase to ascertain whether compression treatment after sclerotherapy led to better results. We identified five prospective randomised studies, one prospective cohort study and guideline recommendations on this subject.
Results: The available literature shows that compression treatment for up to 3 weeks after sclerotherapy of spider and reticular veins leads to an improvement in results and a reduction in skin pigmentation. The data concerning foam sclerotherapy of larger veins are ambiguous; one prospective randomised study showed no positive effect of compression treatment, whereas a prospective cohort study demonstrated a better sclerotherapy result, depending on compliance of the patient.
Conclusions: The guidelines contain a general recommendation for compression treatment after sclerotherapy, but no recommendations are given concerning the duration of compression. Due to the limited data, further studies are needed to provide clear evidence of the benefit of compression after sclerotherapy.

Schlüsselwörter
Kompression, Sklerotherapie, Kompressionsstrümpfe, Dauer Kompression

Zusammenfassung
Einleitung: Die Kompressionstherapie gehört zu den basistherapeutischen Maßnahmen der Phlebologie. Aus einer Befragung unter deutschen Phlebologen wissen wir, dass diese in etwa 30 Prozent der Fälle, Patienten nach Sklerotherapie mit Kompressionsstrümpfen versorgen.
Methodik: Um die Frage zu beantworten ob Kompressionstherapie nach Sklerotherapie zu besseren Ergebnissen führt, haben wir eine systemische Literaturrecherche in Medline, Pubmed Central und Embase durchgeführt. Dabei konnten wir fünf prospektive randomisierte Studien, eine prospektive Kohortenstudie und Leitlinienempfehlungen zu diesem Thema identifizieren.
Ergebnisse: Die vorliegende Literatur zeigt, dass Kompressionstherapie bis zu 3 Wochen nach Sklerotherapie von Besenreiser und retikulären Varizen zu einer Verbesserung der Ergebnisse, sowie zu einer Verminderung von Pigmentierungen führt. Die Datenlage zur Schaumsklerotherapie größerer Venen ist uneinheitlich, eine prospektiv randomisierte Studie zeigt keinen positiven Effekt der Kompressionstherapie, eine prospektive Kohortenstudie ergibt einen besseren Sklerosierungserfolg in Abhängigkeit von der Compliance der Patienten.
Schlussfolgerung: In den Leitlinien wird im Allgemeinen eine Empfehlung zur Kompressionstherapie nach Sklerotherapie abgegeben, wobei keine Empfehlungen zur Dauer der Kompression erfolgen. Aufgrund der eingeschränkten Datenlage sind weitere Studien nötig um den Benefit der Kompression nach Sklerotherapie deutlich zu belegen.

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Introduction

Compression therapy is one of the cornerstones of treatment in phlebology. It is capable of reducing venous symptoms and swelling, relieving pain and has an anti-inflammatory effect. In a survey of German phlebologists, participants reported that about 30% of patients received a compression stocking after sclerotherapy (3). It is therefore clear that there is no consensus among German phlebologists as to whether treatment with a compression stocking after sclerotherapy leads to a better outcome and is of benefit to the patient.

Methodology

We undertook a systematic literature search in Medline, PubMed Central and Embase to investigate whether compression following sclerotherapy leads to better results.

We identified 5 prospective randomised studies that had compared compression versus no compression in various protocols after sclerotherapy, one prospective cohort study, a survey and recommendations from guidelines.

Results

The first prospective, randomised controlled study (RCT), in which 40 patients were enrolled, comprised 4 different groups: compression for 3 days, for one week, for 3 weeks and no compression (9). Substantially better results could be achieved after sclerotherapy of spider and reticular veins in the compression groups and there was a clear correlation with the duration of compression therapy: the longer the compression lasted, the better the results. A further effect demonstrated in this study was a significant reduction in skin pigmentation in the compression groups.

Another RCT with 96 patients compared a group, who wore compression stockings (23–32 mmHg) for 3 weeks after sclerotherapy of spider and reticular veins versus a group without compression (2).

Patient satisfaction and quality of life, measured using the SF-36 questionnaire, were comparable in the two groups. The sclerotherapy results were compared by two blinded reviewers, who evaluated photographs of the lateral thigh before and 52 days after sclerotherapy. Significantly better results were obtained in the compression group ($p = 0.026$) compared to the patient group without compression.

A further RCT was identified with 29 patients, in whom sclerotherapy of spider and reticular veins was conducted (4). All patients underwent sclerotherapy on both legs and wore a compression stocking with 30 to 40 mmHg on both legs for the first week. Thereafter, one leg was treated with a compression stocking with 20 to 30 mmHg for 3 weeks, while the other leg received no compression. The results showed significantly less pigmentation and significantly less bruising in the legs with additional compression therapy for 3 weeks.

Another RCT that we found compared a compression stocking with 15–20 mmHg (n=31) versus no compression (n=29) after foam sclerotherapy of the great saphenous vein (1). The occlusion rate of the great saphenous vein after 28 days was 100% in both groups. Improvements in venous symptoms and quality of life were comparable in the two groups. The rate of undesirable side effects was overall very low and comparable in both groups ($p>0.05$). In this study, compression therapy had no advantage.

A prospective cohort study examined the factors that influence the outcome of foam sclerotherapy (7). Age, gender, compliance with post-intervention compression hosiery, previous varicose vein surgery, single or multiple sclerotherapy sites, concentration of the sclerosant, volume of the sclerosant and pre-intervention severity score were investigated. 126 patients were enrolled in the study. Sclerotherapy of the great saphenous vein (n=75), the small saphenous vein (n=13) or the anterior accessory great saphenous vein (n=8) was undertaken. In the remaining patients, other veins or both the great and small saphenous veins were treated at the same time. The median time until a follow-up duplex scan was 3 months. This showed occlusion of the great or small saphenous veins or of accessory veins in 79% of cases. The only factor that was associated with a successful occlusion of the target vein was compliance with compression therapy ($p<0.05$). With regard to the frequently encountered skin discolouration, the only factor that significantly affected this side effect was the female gender ($p<0.05$).

A further randomised prospective study compared how bandaging for 24 hours (n=61) or for 5 days (n=63) after foam sclerotherapy affected the outcome. The study endpoints were the Aberdeen Varicose Vein Severity Score (AVVSS) and the Burford Pain Score 6 weeks after sclerotherapy. There were no significant differences between the two groups in the occurrence of phlebitis or skin discolouration. There were also no significant differences in the improvement in AVVSS. Overall, no advantage of compression bandaging for longer than 24 hours was shown.

In France, a questionnaire was sent to vascular physicians to discover how and for how long compression is carried out after sclerotherapy. Less than one-third of the 366 responders stated that they regularly applied compression after sclerotherapy. Compression was most commonly applied after sclerotherapy of the great or small saphenous veins or accessory veins. If compression was used, it was generally applied with compression stockings of 15–20 mmHg (5). The duration of compression after sclerotherapy ranged from 48 hours to 1 week in 65% of those questioned (n=193/299). The use of compression after sclerotherapy was not in accord with the recommendations of the French health authorities, who recommend the wearing of compression stockings of 15–20 mmHg or 20–36 mmHg for a period of 4–6 weeks after sclerotherapy.

Compression treatment after sclerotherapy is also recommended in the European guidelines (10). This is a Class 1 A recommendation.

Discussion

As the results of our literature search revealed, data on compression after sclerotherapy are very sparse.

The literature does show benefits of compression after sclerotherapy for spider and reticular veins. However, the informative value of some of these randomised prospective studies is limited, because only very small patient populations were investigated. The optimum duration of compression after sclerotherapy of spider and reticular veins appears to be three weeks.

The data on compression after sclerotherapy of larger veins is very inconsistent; in the study by Hamel-Desnos (1), there were no advantages for the compression group, whereas in a prospective cohort study (7), compliance in terms of wearing compression stockings had a positive effect on the outcome of the foam sclerotherapy of larger veins.

Longer-term bandaging of the legs after foam sclerotherapy does not appear advantageous. That can be concluded from the study by Protz (6), which clearly showed that the desired compression pressure of 50 to 60mmHg was achieved by only 10% of users and that the resting pressure of the bandaging significantly decreased after dorsal flexion of the foot 4 times.

In conclusion, it is clear that there are insufficient data available to answer our question of whether compression therapy improves the results of sclerotherapy. Nevertheless, compression is used after sclerotherapy both in Germany (3) and in

France (8) to a varying extent and for varying lengths of time.

For the future, meaningful, well-designed studies are required to clearly substantiate the benefit of compression after sclerotherapy.

Conflict of interest

Dr Thomas Noppeneny, consultancy contract with medi GmbH, Bayreuth

Ethical guidelines

Preparation of the manuscript did not involve any studies on humans or animals.

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