



# CIRC meeting 2019

**Bologna, Italy**  
**October 25-26, 2019**



## **LEG VENOUS SYMPTOMS & INFLAMMATION: ROLE OF COMPRESSION**

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## Conflict of interest:

Hotel as well as flight ticket are paid by CIRC - the Center of Interdisciplinary Research on Compression

Doctor: What brings you here today?

Patient: I am coming because I suffer from  
**BAD CIRCULATION**



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What are the “true” leg venous symptoms in chronic venous insufficiency (CVI)?

# SYMPTOMS & ROLE OF COMPRESSION THERAPY

## 1st problem:

Most symptoms are not related to venous insufficiency

## 2nd problem:

Lack of time or desire makes the doctor not spend enough time explaining the correct ethiology of symptoms and therefore the appropriate treatment.

## 3rd problem:

When real venous symptoms arise, AND **COMPRESSION THERAPY IS THE BEST OPTION BUT THE LESS CONVENIENT FOR THE PATIENT**



## 1st problem:



On the internet LEG VENOUS SYMPTOMS are:

Symptoms of venous insufficiency include:

- swelling of the legs or ankles ([edema](#))
- pain that gets worse when you stand and gets better when you raise your legs
- [leg cramps](#)
- aching, throbbing, or a feeling of heaviness in your legs
- itchy legs
- weak legs
- thickening of the skin on your legs or ankles
- skin that is changing color, especially around the ankles
- [leg ulcers](#)
- varicose veins
- a feeling of tightness in your calves

but

## LEG SYMPTOMS (NO SIGNS)

- SWELLING
- LEG PAIN /ACHING
- HEAVINESS
- ITCHING
- CRAMPS
- BURNING LEGS
- TINGLING
- THROBBING LEGS
- TIGHTNESS

HEAVINESS

LEG PAIN /ACHING

ITCHING

CRAMPS

BURNING LEGS



**INFLAMMATION**

TIGHTNESS

TINGLING

THROBBING LEGS

**1st problem:**

# What are the symptoms of varicose veins? Edinburgh vein study cross sectional population survey

Andrew Bradbury, Christine Evans, Paul Allan, Amanda Lee, C Vaughan Ruckley, F G R Fowkes

**Table 3** Age adjusted prevalence (%) of leg symptoms in men and women

Leg symptoms	Men (n=699)	Women (n=867)	P value
Heaviness or tension	16.0	28.6	$\leq 0.01$
Feeling of swelling	9.2	23.0	$\leq 0.01$
Aching	32.5	53.8	$\leq 0.01$
Restless legs	20.0	35.1	$\leq 0.01$
Cramps	34.0	42.0	$\leq 0.01$
Itching	19.0	25.3	$\leq 0.01$
Tingling	16.0	19.8	0.084

## What are the symptoms of varicose veins? Edinburgh vein study cross sectional population survey

Andrew Bradbury, Christine Evans, Paul Allan, Amanda Lee, C Vaughan Ruckley, F G R Fowkes

BMJ VOLUME 318 6 FEBRUARY 1999 www.bmj.com

### 1st problem:

#### Key messages

- In this population survey women were more likely than men to report a wide range of lower limb symptoms
- In men, only itching was significantly related to the presence of trunk varices
- In women there was a significant relation between trunk varices and heaviness or tension, aching, and itching
- The level of agreement between the presence of trunk varices is probably too low to
- A thorough clinical history and examination are required before surgery

**Conclusions** Even in the presence of trunk varices, most lower limb symptoms probably have a non-venous cause. Surgical extirpation of trunk varices is unlikely to ameliorate such symptoms in most patients.



Eur J Vasc Endovasc Surg (2015) 50, 360–367

**1st problem:**

## Association of Venous Disorders with Leg Symptoms: Results from the Bonn Vein Study 1

M. Wrona <sup>a</sup>, K.-H. Jöckel <sup>b</sup>, F. Pannier <sup>c</sup>, E. Bock <sup>b</sup>, B. Hoffmann <sup>d,e</sup>, E. Rabe <sup>a,\*</sup>

**Conclusions:** Venous disorders show significant associations with several leg symptoms. Itching, feeling of heaviness, or tightness seem to be more closely related than other symptoms. The associations between C classes and symptoms seem to be restricted to classes C2 or higher.

closely associated with venous diseases than others. Restless legs and muscle cramps are not, or less associated, with VVs, CVI, or C classes. These symptoms should no longer be considered as “venous leg symptoms”.

When trunk varices affect the men:  
when affect women :



ITCHING

HEAVINESS

Women reported symptoms before men

# What are the symptoms of varicose veins? Edinburgh vein study cross sectional population survey

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1st problem:

## Are spider veins symptomatic or asymptomatic ?

**Table 5** Age adjusted prevalence (%) of leg symptoms by presence and grade of hyphenweb varices in right legs of men and women

Leg symptoms	Hyphenweb varices			P value*
	None	Grade 1	Grades 2 or 3	
Men	n=144	n=519	n=36	
Feeling of swelling	2.6	8.2	6.0	0.070
Women	n=100	n=707	n=60	
Heaviness or tension	18.5	25.6	41.1	0.003
Feeling of swelling	7.8	19.8	22.2	0.008
Restless legs	24.9	33.6	36.9	0.080

\*Test for linear trend across grade of hyphenweb varices.

1st problem:

Are spider veins symptomatic or asymptomatic ?

## Investigation of non-saphenous veins in C<sub>0</sub>S patients

Marzia LUGLI <sup>1</sup>\*, Oscar MALETI <sup>1</sup>, M. Letizia IABICHELLA <sup>1</sup>, Michel PERRIN <sup>2</sup>

*Int Angiol* 2018;37:169-75.

Duplex changes in symptomatic patients  
affected by minor varicosities

**1st problem:**

## Controversies surrounding symptoms and signs of chronic venous disorders

Marian SIMKA (Ruda Śląska, Poland)

### **The VEINES study , Angiology 1997 ( Abenhaim L. )**

(VEnous INsufficiency Epidemiologic and economic Study; 1531 patients with CVD and 1313 controls were assessed), the authors did not find significant differences in venous symptoms between the controls and patients with varicose veins (C<sub>2</sub>).

## 1st problem:

Controversies surrounding symptoms and signs  
of chronic venous disorders

Marian SIMKA (Ruda Śląska, Poland)

**How specific are venous symptoms for diagnosis of chronic venous disease?. Phlebology 2014. Van der Velden SK**

## CONCLUSIONS:

The small differences in prevalence of reported 'venous' symptoms between

**ASSUMED VENOUS SYMPTOMS ARE NOT SPECIFIC ENOUGH**

venous disease and refluxing veins than is usually assumed.

**1st problem:**

Controversies surrounding symptoms and signs  
of chronic venous disorders

Marian SIMKA (Ruda Śląska, Poland)

## Symptoms of chronic venous disease and association with systemic inflammatory markers

Mohammad H. Howlader, FRCS (Eng),<sup>a</sup> and Philip D. Coleridge Smith, DM, FRCS,<sup>b</sup> *London, England*

*Conclusion: We found no correlation between symptoms reported by patients and the internationally agreed clinical stages*

**NO CORRELATION BETWEEN SYMPTOMS AND CLINICAL CEAP STAGES**  
**NO CORRELATION BETWEEN INFLAMMATORY MEDIATORS & SYMPTOMS**

*the lower limb veins or by the systemic inflammatory response in venous disease. (J Vasc Surg 2003;38:950-4.)*

## 2nd problem:

When you identify the causes of pain and or unpleasant symptoms.

Which are real CVI symptoms ?

## Pathophysiology of pain in venous disease

Nicolas DANZIGER

### ACHING

**Venous stasis:** Main cause of the origin of inflammatory cascade: biochemical changes suggest endothelial cells and neutrophils are the source of this inflammation

-There is a **discrepancy between pain severity in venous disease and the degree of pain** reported by the patient

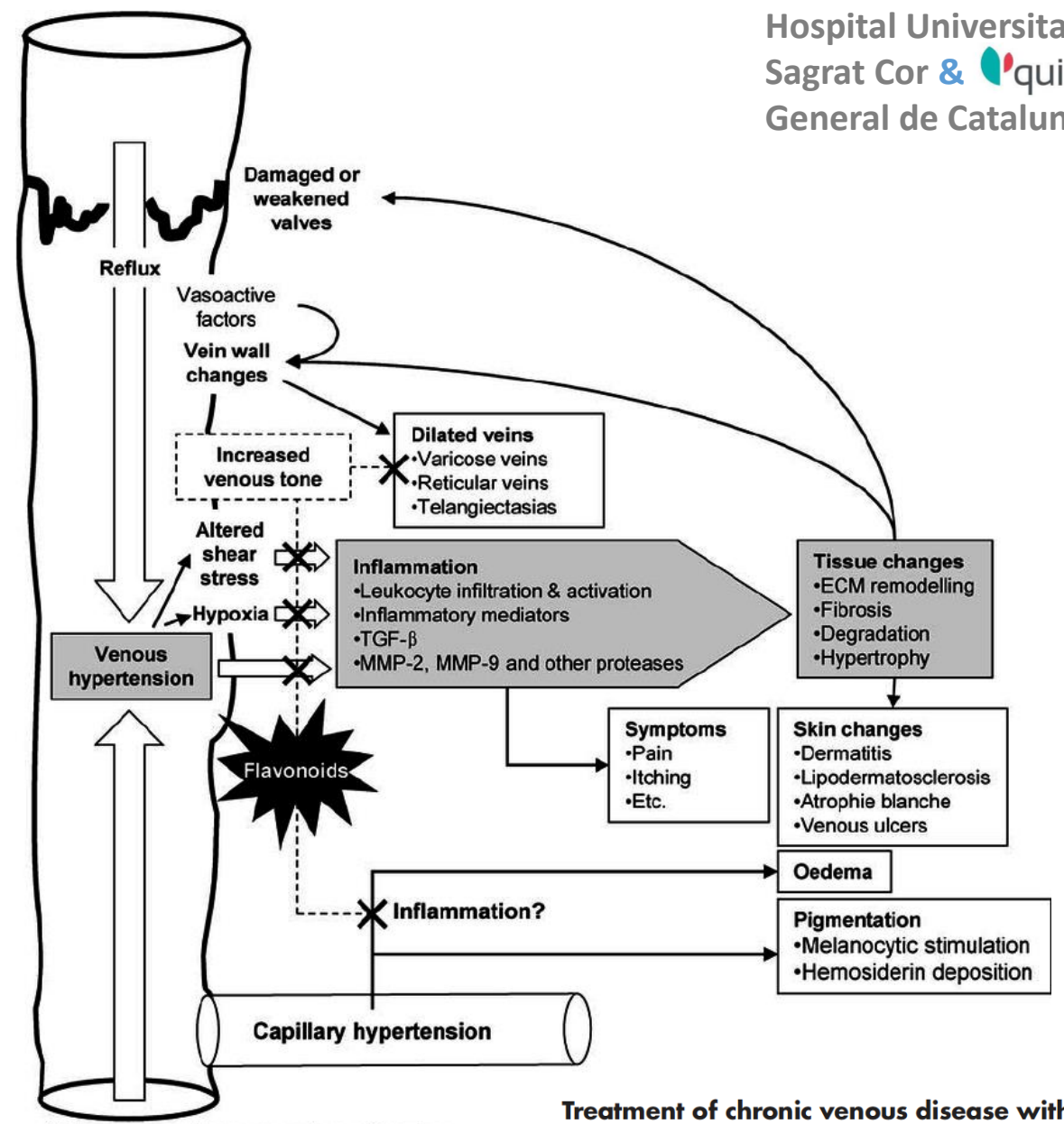
-Neurophysiological mechanisms involved in venous pain are not better understood



**2nd problem:**

**HEAVINESS:**

Mostly related to venous reflux swelling the leg, but it is common in early stages of venous disease. CEAP . C1-2



**Other causes for venous hypertension**  
•Obstruction of venous outflow  
•Failure of the calf-muscle pump

**Treatment of chronic venous disease with flavonoids: recommendations for treatment and further studies**

E Rabe\*, J-J Guex†, N Morrison‡, A-A Ramelet§, S Schuller-Petrovic\*\*, A Scuderi††, I Staelens†† and F Pannier§§

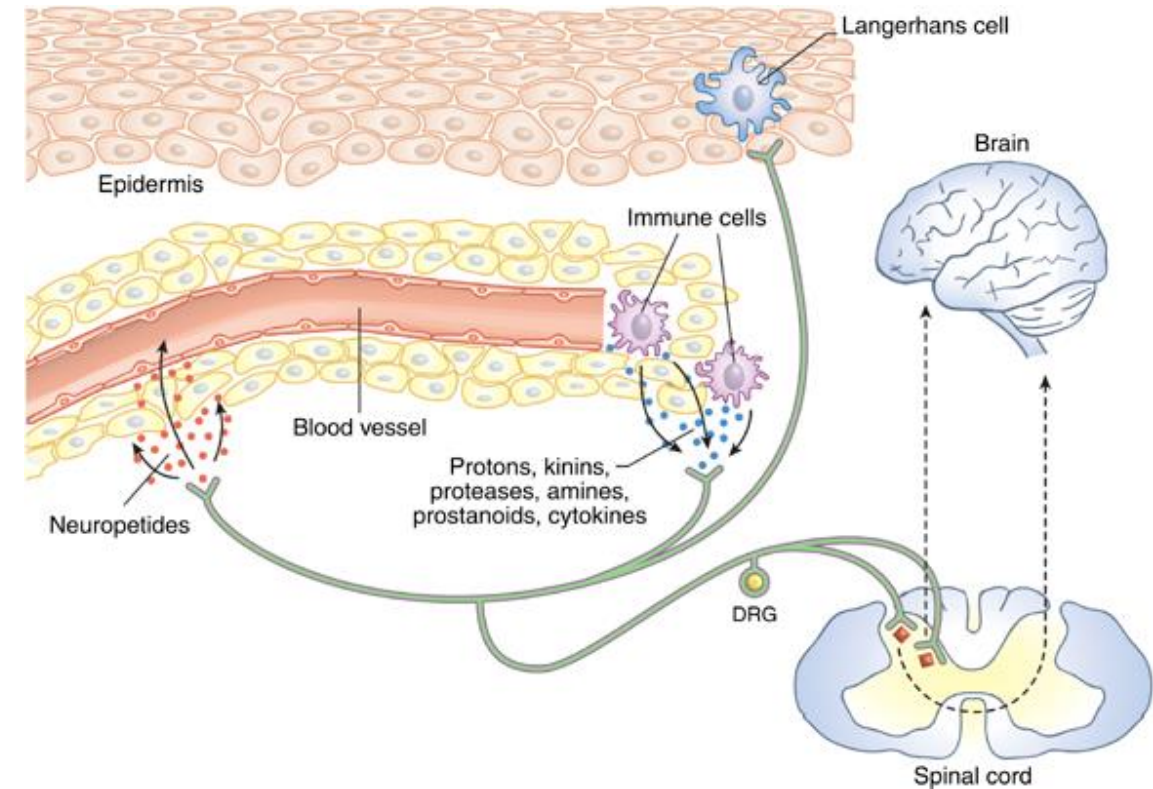
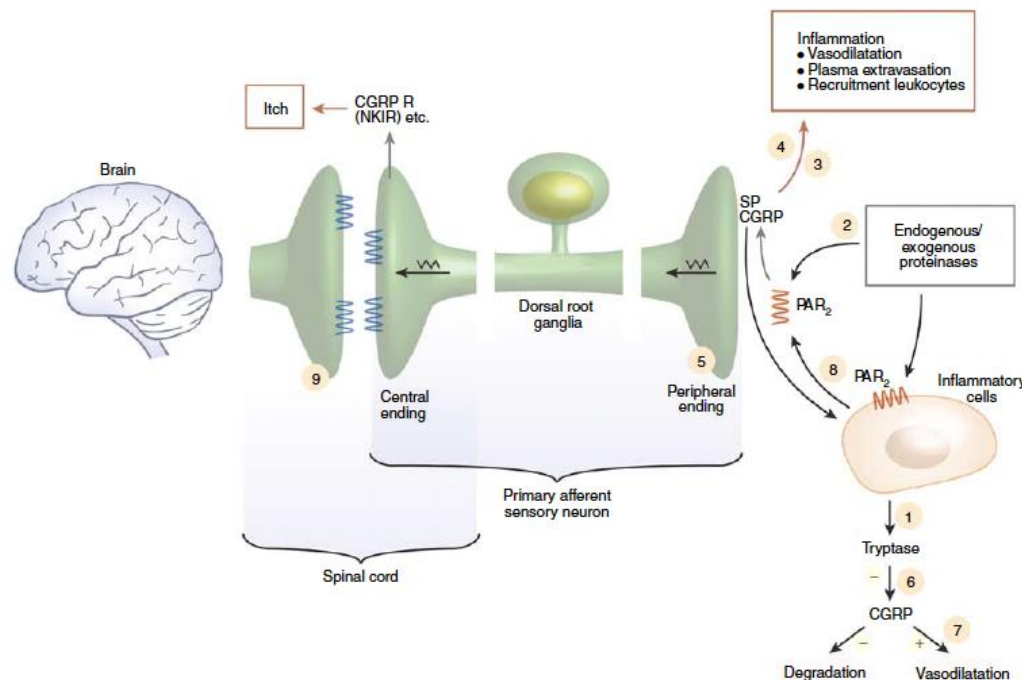
# Neurophysiological, Neuroimmunological, and Neuroendocrine Basis of Pruritus

Martin Steinhoff<sup>1</sup>, John Bienenstock<sup>2</sup>, Martin Schmelz<sup>3</sup>, Marcus Maurer<sup>4</sup>, Ed Wei<sup>5</sup> and Tamás Bíró<sup>6</sup>

## ITCHING:

There is a complex PHENOMENON where multiple inflammatory mediators are involved.

Skin changes in CVD may be the main cause of this unpleasant symptom.



**2nd problem:****RESTLESS / NOCTURNAL LEG SYMPTOMS:**

Nocturnal leg symptoms are not associated with specific patterns of superficial venous insufficiency

Lisa F. FRONEK <sup>1</sup>\*, Nisha J. BUNKE <sup>2</sup>, Helane S. FRONEK <sup>2</sup>

**Conclusions**

This study demonstrates the prevalence of nocturnal symptoms in patients presenting to a venous disease practice, as well as the likelihood of finding reflux in multiple sites within the superficial venous system in those patients.

Kanter & Hayes, demonstrated clinical improvement after sclerotherapy and or EVLT

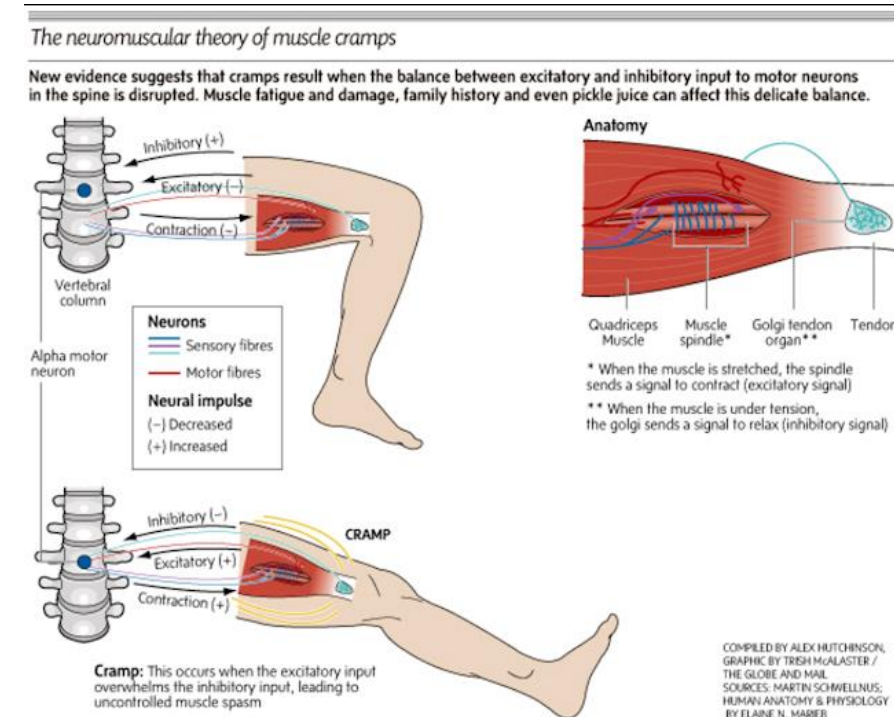
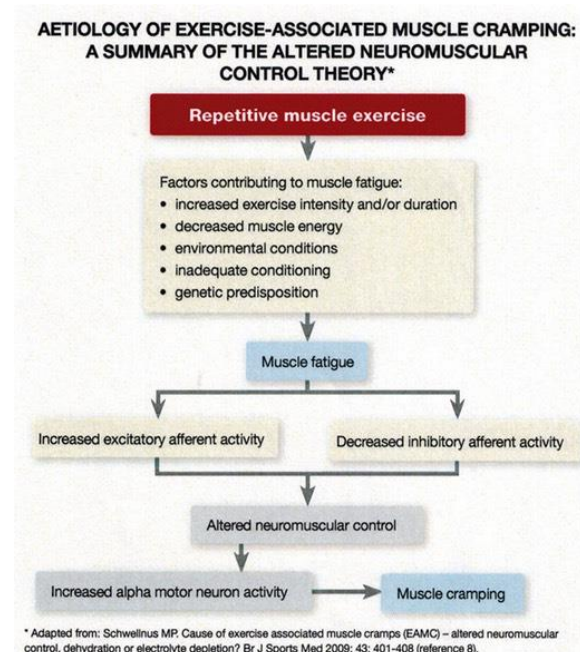




## 2nd problem:

Are **CRAMPS** really a venous insufficiency symptom? **NO They aren't**

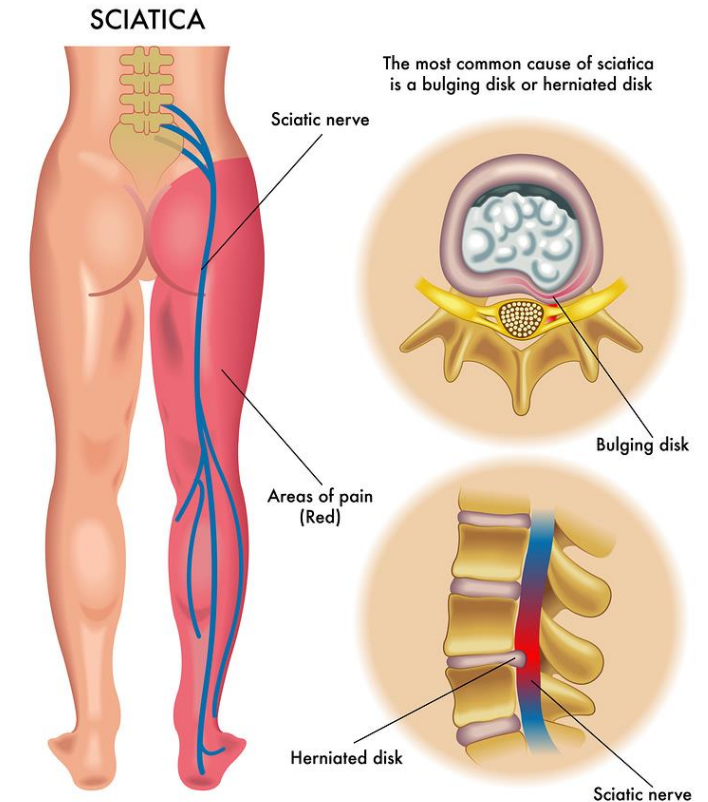
Up until now I haven't been able to find the link... but the massage effect of compression may contribute to ameliorate or improve the tendency to suffer cramps...



## 2nd problem:

### TINGLING: There isn't a real link..

Numbness or sensation of paresthesia. It is not related to venous disease specifically and frequently affects the arm or hand.



### 3rd problem:

When you prescribe Compression therapy

# ROLE OF COMPRESSION THERAPY

3rd problem:

Chronic Vein  
Insufficiency (CVI)

## Graduated compression stockings

CMAJ, July 8, 2014, 186(10)

Chung Sim Lim MBBS PhD, Alun H. Davies DM

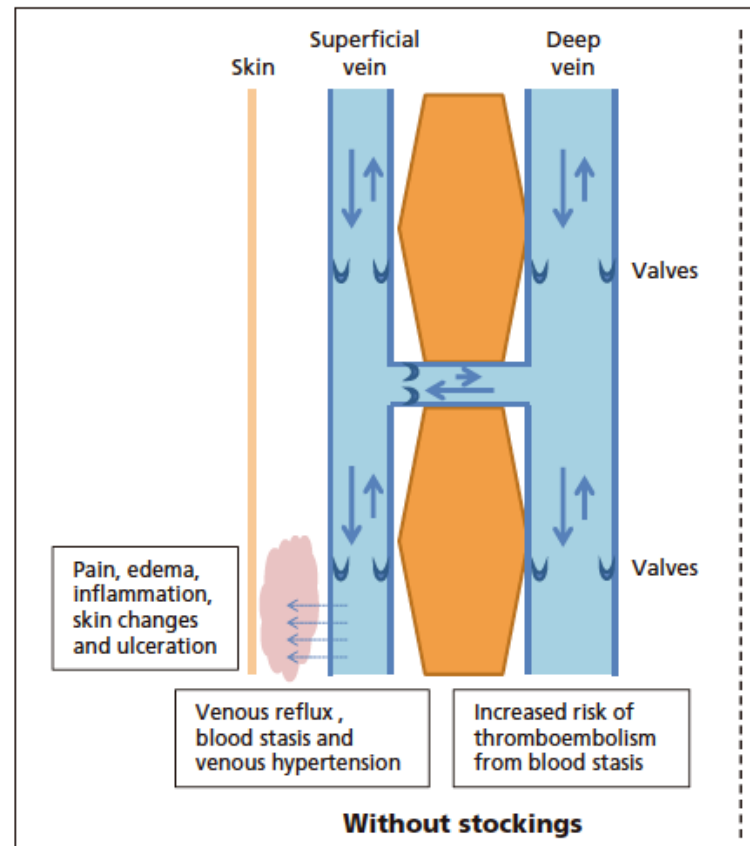
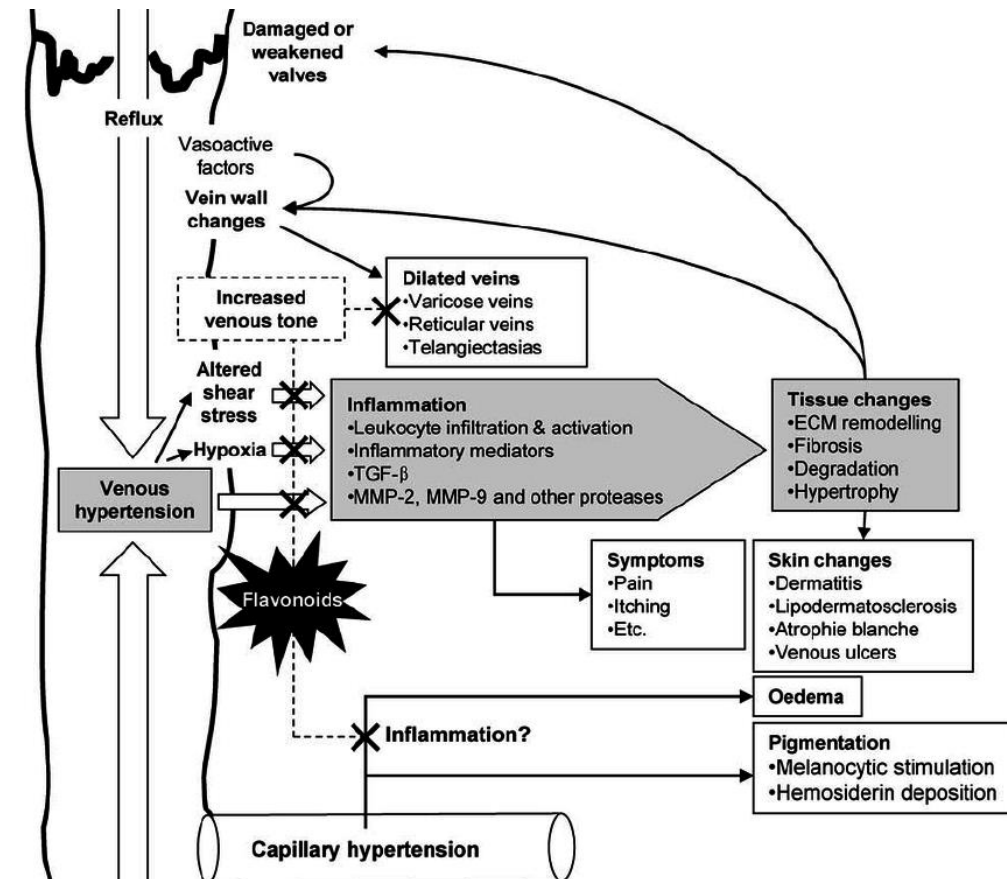


Figure 2: The mechanisms of action of graduated compression stockings

## Treatment of chronic venous disease with flavonoids: recommendations for treatment and further studies

E Rabe\*, J-J Guex<sup>†</sup>, N Morrison<sup>‡</sup>, A-A Ramelet<sup>§</sup>, S Schuller-Petrovic<sup>\*\*</sup>, A Scuderi<sup>††</sup>, I Staelens<sup>††</sup> and F Pannier<sup>§§</sup>



INFLAMMATION

# ROLE OF COMPRESSION THERAPY

3rd problem:

## Graduated compression stockings

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Chronic Vein  
Insufficiency (CVI)

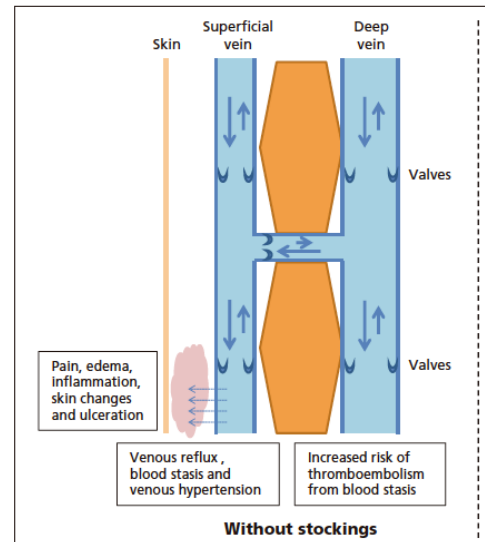
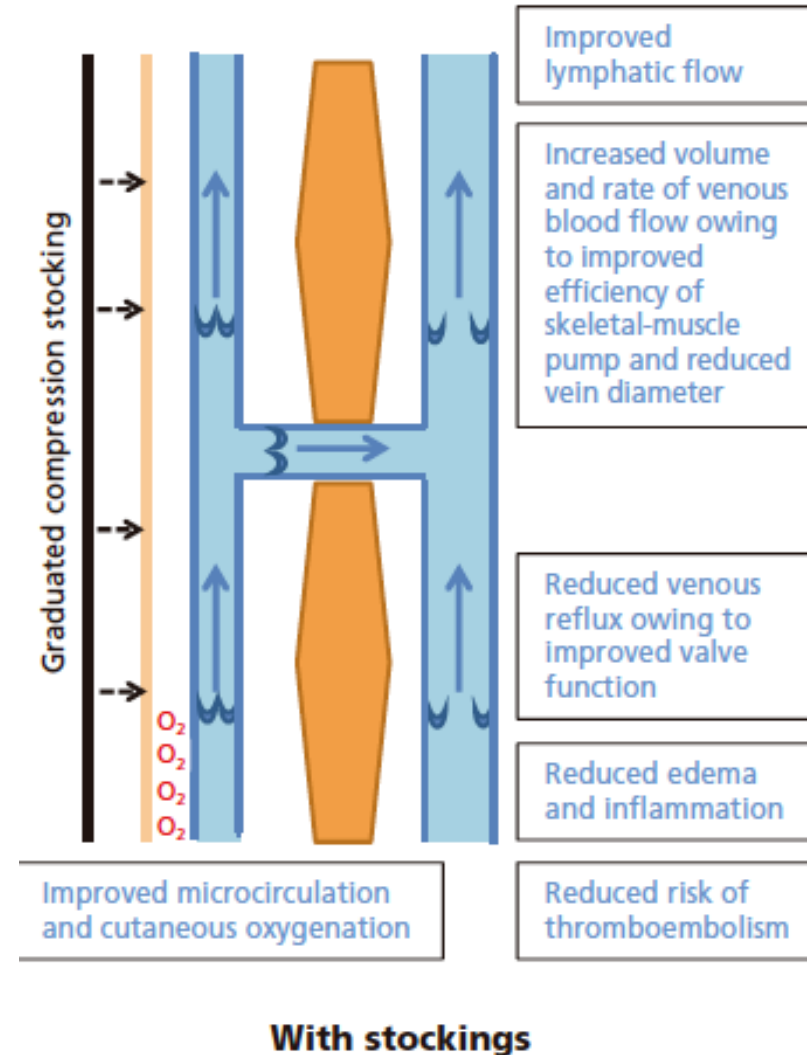


Figure 2: The mechanisms of action of graduated compression stockings





# EFFECT OF COMPRESSION THERAPY in “real” VENOUS SYMPTOMS

## 3rd problem:

**Table 3 Effects of compression therapy**

Parameter	Investigative method (Examples)
Sub-bandage pressure	MST-tester®, Kikuhime®, Picopress®, AMI® Japan
Reduction of edema	Volumetry, isotopes, ultrasound, MRI
Reduction of venous volume	Phlebography, blood pool scintigraphy, Air plethysmography (APG), MRI
Increased venous velocity	Circulation time (isotopes), Duplex
Blood shift into central compartments	Blood pool scintigraphy, cardiac output
Decreased venous reflux	Duplex, APG
Improved venous pump	Foot volumetry, plethysmography, venous pressure
Decreased arterial flow (very strong compression)	Duplex, Xenon-clearance, Laser Doppler
Increased arterial flow (moderate and intermittent compression)	Nuclear magnetic flowmetry, Laser Doppler, tcPO <sub>2</sub>
Effect on microcirculation	Capillaroscopy, tcPO <sub>2</sub> , Laser Doppler
Increased lymphatic drainage	Isotopic and indirect lymphography, indocyanin green
Effect on ultrastructure and cytokines	Microscopy and histochemistry, laboratory investigations

## EFFECT OF COMPRESSION THERAPY in “real” VENOUS SYMPTOMS

### 3rd problem:

**Table 2 Indications for which the use of medical compression stockings could be proven by evidence based medicine<sup>3)</sup>**

Light compression stockings (<20 mm Hg)	<p>Improvement of venous symptoms in patients with CEAP C0s-C1s and in varicose veins of pregnancy</p> <p>Prevention of leg swelling related to prolonged sitting and standing (“occupational leg oedema”)</p> <p>Prevention of venous thromboembolism in bed-ridden patients especially after general surgery</p>
Medical compression stockings (20–30 mmHg)	<p>Better results and less adverse outcome after sclerotherapy of small teleangiectasias (C1)</p> <p>Improvement of subjective symptoms in varicose veins of pregnancy</p> <p>Less pain and swelling in the acute phase of deep vein thrombosis</p>
Medical compression stockings (30–40 mmHg)	<p>Less side-effects after sclerotherapy of large veins (C2) compared to light bandages</p> <p>Reduction of lipodermatosclerotic areas on the leg (C4b)</p> <p>Improved healing of venous leg ulcers (C6)</p> <p>Prevention of ulcer recurrence, higher pressure ranges seem to be superior</p> <p>Prevention of PTS after proximal DVT</p> <p>Maintenance therapy in lymphoedema</p>

# Graduated compression stockings

CMAJ, July 8, 2014, 186(10)

Chung Sim Lim MBBS PhD, Alun H. Davies DM

3rd problem:

## KEY POINTS

- Graduated compression stockings vary in terms of degree of compression, length, textile material, colour, design and manufacturer.
- There is high-quality evidence for the use of the stockings in patients with chronic venous insufficiency, especially those with ulcers.
- Graduated compression stockings need to be measured and fitted properly.
- Although use of the stockings is usually safe, several adverse effects and complications, including allergic reaction and skin necrosis, have been reported.
- Clinicians often underestimate the importance of patients' compliance with compression therapy, which is known to be low.
- Addressing patients' concerns, providing adequate information and reassurance, changing the stocking material or lowering the degree of compression usually helps improve compliance.

# ROLE OF COMPRESSION THERAPY

## 3rd problem:

SYMPTOMS	PATHOPHYSIOLOGY	CVD RELATION	COMPRESSION BENEFIT
Heaviness /Swelling	Vein Reflux and dilation/not plus its Intracompartmental hipertension. Increase of interstitial fluid due to a venous stasis	YES	YES
Aching	Microvascular Inflammation	YES	YES
Restless	Neuro muscular disorder	NOT DEMONSTRATED	VARIABLE
Cramps	May involve hormonal, electrolyte or metabolic imbalances, or it may result from long-term medication.	NOT DEMONSTRATED	¿?
Itching	Neuro, inmuno, endocrine	MICROVASCULAR	VARIABLE
Tingling	Neuro, muscle skeletal	NOT DEMONSTRATED	¿?

# VENOUS SYMPTOMS: ROLE OF COMPRESSION THERAPY

## 1st problem:

Symptoms not related:

WE ARE FORCED TO EXPLAIN AND FIGHT AGAINST MYTHS AND  
“FAKE INFORMATION”.

## 2nd problem:

Doctor does not spend time:

PATIENT EDUCATION IS NECESSARY FOR THEIR SELF CARE AND  
ACCURATE INFORMATION IS AN ENFORCEABLE RIGHT

## 3rd problem:

Convenience of Compression Therapy:

Use the argument of **SCIENTIFIC EVIDENCE**

**ADAPT TO THE PATIENT:** Tailoring the prescription

**PROPOSE A CLOSE SURVEILLANCE:** Results are the best evidence

**EMPOWER** the patient:

Convince them that they have the key to improve their **CVI** symptoms

# Thank you



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