What is the Significance of Venous Signs and Symptoms in CVD

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Disclosures
Professor Nicolaides has received honoraria for lecturing in the field of chronic venous disease by:
Servier
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Medronic/Cardinal Health

Chronic venous disease-related symptoms and signs

Symptoms:
- heaviness
- pain
- sensation of swelling
- restless legs
- paresthesia
- night time cramps
- tenderness
- throbbing
- itching

Signs:
- C0
- C1: Telangiectasia, reticular veins
- C2: Varicose veins
- C3: Edema
- C4: Skin changes:
  -(a) pigmentation, eczema,
  -(b) lipodermatosclerosis, atrophie blanche
- C5: Healed Venous ulcer
- C6: Active Venous ulcer


Progression of chronic venous disease

MACROcirculation
- Valve damage
- Vein wall remodeling
- Reflux
- Venous Ulcer (C2)

MICROcirculation
- Capillary leakage
- Capillary damage
- Edema (C3)
- Skin Changes (C4)
- Venous Ulcer (C5,6)

Hypertension

Venous Hypertension and Protective Mechanisms

1. Ability of lymphatic drainage to increase 5-10 times in some individuals but only 2 times in others (zero in patients with lymphedema)
2. Variable fibrinolytic activity in blood and tissues
   - For patients having moderately raised AVP 35-65
     - If fibrinolytic activity is low: 90% develop skin changes and 70% ulcer
     - If fibrinolytic activity is normal or high: 16% develop ulcer
   Whawell SA et al, Br J Surg 1989; 76 (SRS Abstract)
3. Time i.e. Duration of the disease
Papadakis KG et al, Int Angiol 2015;34(3):263-8
AVP and Popliteal Valve Status in 45 C5and C6 Limbs

![Graph showing AVP and Popliteal Valve Status](image)

Papadakis et al, Int Angiol 2015;34:

Papadakis et al, Int Angiol 2015;34:

Duration of Symptoms

10 ± 4 Years

Orthogonal Polarization Spectral (OPS) Imaging

Quantitative measurements of dermal papillae

Portable; attaches to laptop.


Orthogonal polarization spectral (OPS) imaging

Quantitative measurements of:

- Functional capillary density (FCD, capillaries/mm²)
- Diameter of dermal papilla (DDP, μm) to quantify edema
- Largest diameter of the capillary bulk (DCB, μm) to assess the degree of change
- Capillary limb diameter (CD, μm) to describe diameter changes
- Capillary morphology (CM, % of abnormal capillaries per field).


CEAP C0-C6 (N=112 Limbs)

FCD, DDP, DCB, CD and CM values are progressively altered from C1 to C6 patients and are significantly different from healthy subjects (P<0.05).

C0a vs C0s

20 women C0a

30 women C0s (normal duplex)

Effect of VAD on OPS Imaging

Relief of symptoms with VAD was associated with reduction in capillary diameter


Production of symptoms: activation of C Nociceptors

Inflammatory mediators:
- Bradykinin, serotonin, PG, LT, PAF, interleukins

Nociceptors (C fibers)

Nonlocalized nociceptive message \(\rightarrow\) Diffuse pain

Localized pain

Symptoms of CVD

Special features: Diffuse, vague and widespread

We need to listen to the patient and do a careful interrogation

Often there is a combination of symptoms (not just one)

May be confounded by other conditions (osteoarthritis of hip or knee, sciatica, cardiac failure)

Supplementary Questions

(a) How symptoms interfere with your quality of life?
(b) What worries you most?