The "C" of CEAP: Suggested definitions and refinements: An International Union of Phlebology conference of experts

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The field of chronic venous disease (CVD) has suffered from a lack of precision in diagnosis. This deficiency has led to conflicting reports in studies of management of specific venous problems. It is believed that these conflicts would be resolved with precise pretreatment diagnosis and classification of each affected limb. Adoption of a single classification worldwide would facilitate meaningful communication about CVD and serve as a basis for a more scientific analysis of management alternatives.

In February 1994, these problems were addressed by an international ad hoc committee of the American Venous Forum at a meeting organized by the Straub Foundation in Maui, Hawaii. This committee under the chairmanship of Andrew Nicolaïdes produced a consensus document for classification and grading of CVD on the basis of clinical manifestations (C), etiologic factors (E), anatomic distribution of involvement (A), and underlying pathophysiologic findings (P), the CEAP classification. The purpose was to provide a comprehensive objective classification that could be used worldwide.

The CEAP system was published in 25 journals and books in eight languages (Table II). Today, most published papers in phlebology use portions of the CEAP classification. The authors of this classification understood that it needed to be augmented and changed as new knowledge in phlebology appeared. In 2000, two developments of the CEAP system were published. An ad hoc committee of the American Venous Forum presented a new venous severity scoring system,[1] and an international consensus conference in Paris suggested a new classification for recurrent varicose veins after surgery.[2]

On a French initiative, the European Phlebological File was created where 49 angiologists from nine European countries entered exhaustive data from 872 patients. The external consistency of the clinical classification "C" was good and the internal consistency was poor. The French team has also studied the reproducibility of the C classes[3] and found that the intraobserver reproducibility was good (85%) and the interobserver reproducibility was poor (47%). A conference of experts on refinement of "C" in CEAP was organized at the 14th World Congress of the International Union of Phlebology (IUP) in Rome, September 2001.

From the International Union of Phlebology Working Group (Table I).
Competition of interest: nil.
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METHODOLOGY

The aim of this conference was to improve the poor interobserver reproducibility[3] by increasing the accuracy of clinical definition of classes, staying in a perfect consistency with the official definitions given by the Ad Hoc Committee (Table II). Every president of a Member Society of the IUP or a delegate was invited by the Organizing Committee (Table I) to participate at the Conference, which stood during the World Meeting in Rome.

Proposals were made by the experts to define each "C" class, and a protocol was produced after thorough discussion with the audience. A Redaction Committee (Table I) wrote a first version of the definitions, which was subsequently agreed on by every member of the expert group, leading to the final version proposed below.

Members of this group thoughtfully considered the existing definitions in the original CEAP document. They believed that in a number of instances these needed better definition and amplification.

REPRODUCIBILITY

As stated previously, studies of the practical use of CEAP showed considerable interobserver variation among phlebologists in their classification of patients. Those with more advanced venous disease were most reliably classified. However, patients in CEAP clinical stages C0, C1, and C2 were commonly classified differently by different physicians.

To improve the reliability of CEAP, the working group attempted to redefine commonly used terms essential to the CEAP classification. Explanations of some of the definitions are included below to help readers to understand our thinking where we consider that this would be useful.

USE OF CEAP: ALL POPULATIONS OR JUST THOSE WITH VENOUS DISEASE?

The CEAP classification is so precise that it should be used to classify limbs and not just patients. Because some

Table I. IUP Working Group (20 members)

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limbs are completely normal, these should be included in the C0 clinical stage. The "EAP" parts of the classification will document that there was no evidence of any venous disease in these limbs. This precise application of the definition allows control subjects and limbs in clinical trials to be classified as C0.

Some members of the committee believe that the subsequent definitions should be applied only to limbs with venous disease. They consider that limbs that have no evidence of venous disease after ultrasound scan or other special investigation should be excluded from this classification and said to have "no venous disease." If symptoms are present in these limbs, they should be attributable to problems other than venous disease.

APPLICATION OF THE CLINICAL CLASSIFICATION

The authors have included descriptions of a number of clinical signs (eg, edema, eczema) that can be caused by nonvenous disease processes. However, the use of this clinical classification should be confined to patients with venous disease.

USE OF "C" OF CEAP AS CLINICAL DESCRIPTION OR CLASSIFICATION OF LIMBS OR PATIENTS

Patients and limbs with venous disease will often have several of the findings in each clinical stage of CEAP. The use of CEAP implies that a limb will be represented by the most severe clinical class present in that limb. This allows comparison to be made between groups of patients reported by different authors. A change in class can then be recorded subsequent to treatment. The authors consider that either method of use of the CEAP system is appropriate, although physicians using this method should establish in advance how they will use the classification to avoid confusion.

DEFINITIONS OF CLINICAL ITEMS

Telangiectases

A confluence of permanently dilated intradermal venules of less than 1 mm in caliber.

Table II. Journals and books in which CEAP class has been published

Actualités Vasculaires Internationales 1995;31:19-22
Angiologie 1995;47:9-16
Angiology News 1996;19:4-6
Australia and New Zealand Journal of Surgery 1995;65:769-72
Clinica Terapeutica 1997;148:521-6
Dermatologic Surgery 1995;21:642-6
Elleniki Angiochirurgiki 1996;5:12-9
European Journal of Vascular and Endovascular Surgery 1996; 12:487-91
Forum de Flebologia y Limphologia 1997;2:67-74
Handbook of Venous Disorders 1996;652-60
International Angiology 1995;2:197-201
Japanese Journal of Phlebology 1995;1:103-8
Journal of Cardiovascular Surgery 1997;38:437-41
Journal of Vascular Surgery 1995;21;635-45
Journal des Maladies Vasculaires 1995;20:78-83
Mayo Clinic Proceeding 1996;71:338-45
Minerva Cardioangiologica 1997;45:31-6
Myakkangaku 1995;31:1-6
Phlébologie - Annales Vasculaires 1995;48:275-81
Phlebologie (German version) 1995;24:125-9
Phlebology 1995;10:42-5
Przeglad Flebologiczny 1996;4:63-73
Scope on Phlebology and Lymphology 1996;3:4-7
VASA 1995;24:313-8
Vascular Surgery 1996;30:5-11

Explanations. These would normally be visible from a distance of 2 m with good lighting conditions. Synonyms include spider veins, hyphen webs, and thread veins.

Reticular veins

Permanently dilated bluish intradermal veins usually from 1 mm in diameter to less than 3 mm in diameter.

Explanations. They are usually tortuous. This excludes "normal" visible veins in people with transparent skin. Synonyms include blue veins, intradermal varices, and venulectasies.

Varicose veins

Subcutaneous permanently dilated veins equal to or more than 3 mm in diameter in the upright position.

Explanations. Varicose veins are usually tortuous, but refluxing tubular veins may be classified as varicose veins. These may be truncal varicose veins, tributaries, or nonsaphenous. Synonyms include varix, varices, and varicositises.

Corona phlebectatica

Fan-shaped intradermal telangiectases on the medial or lateral aspects of the foot.

Explanations. The significance and place is controversial and requires some thought. Sometimes it could be an early sign of advanced venous disease. Alternatively, it may occur in limbs with simple telangiectases elsewhere. Synonyms include malleolar flare and ankle flare.

Edema

Perceptible increase in volume of fluid in subcutaneous tissue characterized by indentation with pressure.

Explanations. This definition includes only edema attributable to venous disease. Venous edema usually occurs in the ankle region, but it may extend to the leg and foot.

Pigmentation

Brownish pigmentary darkening of the skin usually occurs in the ankle region but may extend to leg and foot.

Explanations. This is an early skin change.

Eczema

Erythematous, blistering, weeping, or scaling eruption of the skin of the leg.

Explanations. It is often located near varicose veins but may be located anywhere in the leg. Sometimes it may spread to the entire body. Eczema is usually caused by CVD or by sensitization to local therapy. Synonyms include stasis dermatitis.

Lipodermatosclerosis

Localized chronic induration of the skin sometimes associated with scarring or contracture.

Explanations. This is a sign of severe venous disease, characterized by fibrosis and chronic inflammation of the skin, subcutaneous tissues, and sometimes the fascia.

Hypodermitis

An acute form of lipodermatosclerosis is referred to as hypodermitis. This is characterized by diffuse reddening of the skin from acute inflammation and by tenderness.

Explanations. The absence of lymphadenitis and fever differentiates this condition from erysipelas or cellulitis.

Atrophie blanche or white atrophy

Circumscribed, often circular whitish and atrophic skin areas surrounded by dilated capillary spots and sometimes hyperpigmentation.

Explanations. This is a sign of severe venous disease. Scars of healed ulceration are excluded in this definition.

Venous ulcer

Chronic defect of skin that fails to heal spontaneously, caused by CVD.

REFINEMENT OF 'C' OF CEAP

Classes include: C0, No visible or palpable signs of venous disease; C1, telangiectases or reticular veins; C2, varicose veins; C3, edema; C4, skin changes ascribed to venous disease; C4, a, pigmentation or eczema; C4, b, lipodermatosclerosis or atrophie blanche; C5, skin changes as defined previously with healed ulcer; and C6, skin changes as defined previously with active ulcer.

Explanations

C1/C2. The original definition separated varicose veins from reticular veins by a diameter of 4 mm as the upper limit of size of a reticular vein. The authors consider that this should be revised downwards to 3 mm. In a large study, it could be shown that the cutoff diameter of 3 mm discriminates better between class 1 and class 2 than 4 mm.[3]

C3. Some previous publications with CEAP classification contain a number of different phraseologies. The original classification did not include corona phlebectatica, although this was included in the earliest publication under the name of malleolar flare. This clinical sign may be an early sign of chronic venous insufficiency[4] so that some experts recommend staging it as C3. The authors recommend taking the corona phlebectatica into consideration for the future studies. It should be collected in addition to other CEAP data.

C4. We propose to divide C4 class into two subclasses to better define the differing severity of skin changes that are seen in venous disease. The original C4 stage included all skin changes in one class for simplicity. The authors recognize that lipodermatosclerosis and atrophie blanche predict the development of leg ulcer. Eczema and pigmentation occur commonly and do not usually predict the appearance of ulcers.

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Please see related commentary by Dr Gregory L. Moneta on pages 224-5.