Hemodynamics Of Venous Disease: Toward A Better Understanding And Consensus

GUIDELINES
Venous hemodynamic concepts and measurements in the study of lower limb venous disease - the IUP Consensus according to scientific evidence -

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DISCLOSURE OF CONFLICTS OF INTEREST

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I do NOT have any relevant financial relationships with any commercial interests.

The International Union of Phlebology (IUP), the largest international organization devoted to the investigation and management of venous disorders, has contributed many outstanding consensuses through years as the guideline for physicians and health care professionals around the world on the evaluation and treatment of various venous disorders.

Despite many excellent guidelines for the clinicians to manage the venous disorders, rarely the hemodynamic status of venous disorders was reviewed seriously as an independent issue. The hemodynamic issues involved to the venous system remained unchallenged through decades mainly due to its complicated nature with many unknown aspects to be further verified.

Recently, the controversy involved to newly proposed hemodynamic concept – CHIVA and ASVAL - added significant confusion on traditional interpretation of various hemodynamic phenomena so that the update on this rapidly changing concepts was mandated.

IUP executive board commissioned an expert group/panel in this unique field to assess many controversial issues based on the EBM (evidence-based medicine) principle either to prove it with the evidence or clarify it as a myth with no evidence, and formulate guidelines for physicians and health care professionals around the world on the Venous Hemodynamic concepts and measurements in the study of lower limb venous disease through the Consensus according to scientific evidence.

This document aims to provide guidelines on venous hemodynamic measurements in the investigation of lower limb venous disease based on the currently available scientific evidence.

This will provide an essential background for the clinicians and researchers who are involved in the diagnosis and management of lower limb venous disease with a clear and concise account of the hemodynamic evidence on the various concepts accepted for the venous disorders either to back up previous recommendations or show that unfounded based on the best currently available scientific evidence.

It also aims to provide the recommendations based on the best currently available scientific evidence. When scientific evidence was lacking or weak, a consensus of opinions among expert members of the panel was reached to support the recommendations.
IUP Consensus on Venous Hemodynamics

- We invited 59 experts from four corners of the world to organize the faculty for this consensus based on their academic credentials in this unique field involved to venous hemodynamics.

- Thirty one issues proposed as the agenda for the consensus altogether were thoroughly reviewed and a total of 13 topics were carefully selected based on the consensus through the discussion among the faculty members.

- For each chapter, the primary writer(s) we invited to lead, carefully organized the base draft with the assistant writers, mostly volunteered among the faculty members, to complete the FIRST edition of the chapter. And majority of the chapters went through further (peer) review by invited reviewer(s) who were not involved to the writing, to get a critical independent opinion with no conflict of interest before proceeding to SECOND edition.

IUP Consensus on Venous Hemodynamics

The first draft was formulated on all 13 issues as guidelines on the venous hemodynamic concepts and measurements in the study of lower limb venous disease according to scientific evidence through the Year 2013; they are broad ranged and incorporated proven concepts and new discoveries based on the progress in both diagnostic techniques and minimally invasive technology.

A significant improvement on the interpretation of various rheological issues in the last decade has been fully incorporated to provide the recommendations strictly based on the evidence.

IUP Consensus on Venous Hemodynamics

The panel modified the universal grading system: 'Grading Recommendations According to Evidence' proposed by Guyatt et al (Chest, 2006;129:174-181) to fit better to unique condition of this Hemodynamics Consensus as following:

- **Level 1 evidence - Grade A recommendation**: (if a recommendation is to be made)
  - Evidence from high quality studies (strong methodology, low likelihood of bias or confounding) which is consistent across studies and gives a precise estimate of effect (narrow confidence intervals). Findings are unlikely to change with future research. There should be at least 2 such studies.

- **Level 2 evidence - Grade B recommendation**: (if a recommendation is to be made)
  - Evidence from single high quality study, as above or several intermediate quality studies with respect to methodology (moderate likelihood of bias and/or confounding, or with conflicting studies producing wide confidence intervals) which may change with future research.

- **Level 3 evidence - Grade C recommendation**: (if a recommendation is to be made)
  - Evidence from a single study based on poor methodology, anecdotal observations or expert opinions that is likely to change with future research.

If data is not available, then we say so and make recommendations for future research putting the appropriate question or question that need to be answered.
Chapter 10. Association between hemodynamic changes and venous clinical severity

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Based on the recommendation by the faculty members through the workshop held during Orlando AVF* meeting in 2012, this document focused only on hemodynamic concepts of the venous circulation in the lower limb that are related to physiology, pathophysiology, various methods of investigation and management of venous disease.

This document is NOT a repetition of the guidelines on the investigation or management of venous disease as recently published in JVS, but provided the hemodynamic background of the various methods recommended.

*AVF: American Venous Forum

Published recommendations on management are based on clinical trials with clinical endpoints and therefore valid, but are often provided without reference to the hemodynamic background. Therefore, this document limited its scope strictly to evidence based data (i.e. published measurements) since our understanding of many areas of venous hemodynamics is limited.

However, there is a need for identifying those areas that lack knowledge of any hemodynamic measurements and warrant further investigation.

1. Recommendations for management or investigation.
2. How to and when to perform different treatment procedures (e.g. operations, compression, medications etc).
3. How to perform different investigations (e.g. duplex, venography, IVUS, pressure measurements).
4. Normal anatomy (All this is available in textbooks and published guidelines)

Thank you for your attention!

With deep appreciation to each 59 faculty members for their unlimited contribution throughout long tedious course of the consensus formulation, especially to Dr. Angelo Scuderi with his unconditional support as President of IUP and also Prof. Andrew Nicolaides for his dedication through the second and final contribution.