

## Preface

Diagnosis and treatment of vascular diseases have made tremendous progress since the introduction of non-invasive ultrasound technologies in clinical practice in the early 1970s. Today ultrasound is capable of monitoring the early silent stages of atherogenesis as well as the morphological features of advanced atherosclerosis during its progression and regression in all major arteries of the body. The ability of ultrasound to visualize both arterial and venous thrombus formation has been expanded to include detection and quantification of circulating microemboli. Vascular ultrasound studies are important tools in individual patient diagnosis and during follow-up, and notably in randomized, prospective clinical trials that serve to strengthen evidence-based medicine for clinical practice. The recent use of state-of-the-art ultrasound monitoring in such studies has helped to introduce new pathways for the management of our patients, both in modern industrialized societies and in developing countries. Increasing age combined with the unfortunately remaining high prevalences and incidences of myocardial infarction, stroke, and peripheral vascular disease underline the need for early identification of subjects at high risk for treatment in a yet asymptomatic period with potential therapeutic impact in primary prevention, and for means to improve monitoring for secondary prevention. Ultrasound will continue to play a major role in realizing these important goals of preventive medicine; as it is non-invasive, always available, and economically viable, it has distinct advantages over all other vascular diagnostic tools.

The first German edition of this book (1988) was welcomed by both novice and experienced sonographers due to its strict illustrative composition. A major revision published in 1994 was necessary for inclusion of rapidly developing technologies. This edition first introduced a collection of individual case histories and vascular findings, which became of major interest to many readers of the book. The atlas illustrated from the very beginning the combined use of ultrasound technologies with clinical data and other methods applied in clinical practice and was particularly useful and well accepted both by the specialized collaborations in the vascular laboratory, as well as by clinicians unfamiliar with specific ultrasound tests but using their reports. In 1997 when the first English edition was published, rare findings and specific problems were only occasionally included and selected repetitions were intentional for educational purposes. This edition was also a complete revision of the second German monograph and included advanced ultrasound applications as well as data from

large study trials and basic research. It also introduced experimental techniques just investigated in research laboratories at that time (harmonic imaging, 3-D and 4-D imaging, flow volume measurements, intra-arterial and interventional applications, functional and monitoring studies, etc.). A third German edition was published very soon thereafter in 1999; due to the fast development of ultrasound, this edition included new data on imaging of perfusion in different organs and investigations of small vessel networks by means of new echocontrast media.

Since the amount of material to be included in the new second English edition of "Vascular Diagnosis with Ultrasound" has been growing so rapidly and because we did not want to miss the broad spectrum of vascular ultrasound applications addressing a large community of both investigators and clinicians (who are now confronted with results of ultrasound studies from throughout the world using different instruments, different technologies, and different economic restrictions), we decided to completely revise the text and split the book into two volumes. The first volume deals with cerebral and peripheral vessels. The second volume addresses the abdominal vessels, small parts vessels, and topics such as tumor vascularization, which has become a fascinating area of vascular ultrasound. The complete revision includes both diagnostic and therapeutic aspects of ultrasound that address, particularly in the atlas, the advantages of recent neurosonologic technologies and applications. This edition also provides new information on ultrasound procedures in peripheral angiology, reflecting the results of recent ultrasound studies that provide normative parameters for therapeutic decisions. Newer horizons in vascular sonography, such as sonothrombolysis in stroke, peripheral artery thrombolysis using intra-arterial ultrasound to cause micro-fragmentation of thrombi, and molecular imaging for non-invasive detection of diseases using microbubbles targeted to disease-associated molecular structures, are only a few of the fascinating perspectives addressed in this new volume.

The first volume of this new second edition has continued to be written by M.G. Hennerici and D. Neuerburg-Heusler. However, this would not have been possible without the help and cooperation of new co-workers, such as Michael Daffertshofer and Stephen Meairs from the Department of Neurology, University of Heidelberg, Universitätsklinikum Mannheim and ongoing cooperation with Thomas Karasch, Department of Internal Medicine (Cardiology/Angiology), University of

Cologne, whose expertise was so well acknowledged already for previous editions. We are grateful to our vascular technicians and secretaries who helped us with the enormous work on the manuscript, including the continuous preparation of the abundant literature in this exciting and developing field. It took us longer than expected but we finally managed to finish the first

volume, with the support of our team from Thieme publishers headed by Cliff Bergman. We are especially grateful for the continuous support of our families, Marion Hennerici, and the late Helmut Neuerburg; without their love and support we would have failed.

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