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Preface

Contrast echocardiography

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Guest Editors

We are delighted to serve as coeditors of this issue of the *Cardiology Clinics*. Over the last decade, contrast echocardiography has made rapid strides into the clinical arena. Advances in microbubble design to permit intravenous injection for left heart contrast and microbubble-specific ultrasound imaging technologies have combined to transform contrast echocardiography from a research tool into a clinical method with expanding applications.

Microbubbles are pure intravascular tracers with an ability to traverse the myocardial capillaries. The latter together with intramyocardial arterioles and venules constitute the coronary microcirculation. Furthermore, capillaries are the site of oxygen transfer to myocytes (ie, they provide myocyte nutrition). Thus imaging the coronary microcirculation becomes an important step in the assessment of various cardiac diseases. Experimental studies since the late 1980s have shown that myocardial contrast echocardiography (MCE) is an elegant and accurate technique for assessing normal and abnormal microcirculatory physiology. Indeed, MCE is unique in that it affords the only method of studying microcirculatory blood volume and flow kinetics because it is based on imaging intravascular tracers.

We are grateful to the contributors featured in this issue. All of them are recognized experts in the field who have provided not only their knowledge but also have reviewed the literature in each of their respective sections. The issue is comprehensive, beginning with articles describing the physics of microbubbles and their interactions with ultrasound, which is critical to comprehend the various imaging approaches available to the echocardiographer. There are extensive reviews

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of the role of contrast echocardiography in current clinical practice, including an excellent description of the practical aspects of implementing the technique in the echocardiography laboratory. The basis of using MCE in acute and chronic coronary syndromes, as well as its use detecting myocardial viability, are thoroughly covered. The role of MCE in cardiomyopathies and imaging the vascular tree is also discussed, providing the reader with a view of the expanding application of contrast echocardiography. Therapeutic and targeted imaging applications of contrast echocardiography are two of the most exciting applications looming on the horizon, with promise of a direct impact on clinical cardiology. These topics are methodically described by experts in the area, a treat to complete the review of contrast echocardiography.

We hope that readers can benefit from this issue, which is devoted to a rapidly evolving clinical technique like none other for imaging coronary microcirculation in health and disease.

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