

Angiogenesis and Direct Myocardial Revascularization

Roger J. Laham, MD, Donald S. Baim, MD, eds
357 pages. Hoboken, NJ: Humana Press; 2005. \$145.00.
ISBN 1-58829-153-7

"The ability to perceive or think differently is more important than the knowledge gained"

David Bohm

The concept of creating networks of blood vessels through the simple infusion of growth factors has caught the imagination of physicians and lay public alike since its first description. Although the heady days of unbridled enthusiasm have now been replaced with the grim reality of the challenges, this notion nonetheless was critical in spearheading new concepts and approaches to entice the body to create blood vessel networks with the ultimate goal of improving form and function. A variety of strategies ranging from the simple direct infusion of growth factors to the expression of genes delivered via plasmids and adenoviral approaches has been tried for the treatment of myocardial and peripheral disorders with limited success. Despite these initial failures, what is remarkable about this field is the rapidity with which approaches and paradigms have changed as knowledge has been assimilated, and the rapid evolution of bench to the bedside approaches. Thus, although the focus of the past decade has been more about how things in the world of angiogenesis do not quite work the way we think they do, the true contribution of this field is that no concept is too radical to consider and test. The areas of angiogenesis and antiangiogenesis have in some ways been harbingers to the era of cell therapy and advances in the former field have been critical in understanding the in vitro growth requirements of stem/progenitor cell populations and their in vivo behavior. The simultaneous evolution of these areas has led to an explosive growth in published literature, making this field a daunting prospect for a novice. Thus, it is essential that new entrants to these areas have access to well-written sources of information that can rapidly bring a reader up to date, without having to read individual papers and limited reviews of the field. *Angiogenesis and Myocardial Revascularization* is a 357-page book that attempts to bridge this gap.

The book is edited by Roger Laham and Donald Baim, who are well-known interventional cardiologists. This book is not a technical guide to the science of angiogenesis and regenerative technology but rather a detailed summary of the trials and tribulations to date in the field of arteriogenesis and direct revascularization. The book consists of 13 chapters written by experts in the field and covers chapters ranging from myogenesis

approaches to arteriogenesis approaches. The first chapter summarizes clinical issues involving "nonrevascularizable" or "no-option" patients and sets the stage for the applicability of new treatment options for these patients. Although there is no chapter on the biology of angiogenesis, the second chapter discusses the role of transcription factors in angiogenesis. This chapter deals with this complex subject with illustrative figures on the role of these factors at various stages of arterial and vein development. The chapter on preclinical models of angiogenesis tracks the development of this field and exhaustively reviews the advantages and disadvantages of each animal model, with specific reference to their applicability in testing growth factor or cell therapy approaches. This chapter is suited for individuals who require guidance with the inherent complexities and perfidiousness of preclinical models.

The chapter on coronary microcirculation is extremely comprehensive and is a useful reference for anyone wishing to understand the structure, function, and physiology of the coronary microcirculation. The chapter on imaging in angiogenesis summarizes the author's developmental experience with MRI of angiogenesis and in general does not provide an overview of the field and alternate approaches. The chapter on myocardial angiogenesis is a comprehensive overview of all preclinical and clinical studies to date with growth factor approaches, whereas the chapter on gene transfer for angiogenesis addresses the state of the science using plasmid and adenoviral approaches for treatment of myocardial and peripheral disorders. The chapter on bone marrow transplantation provides an optimistic overview of the potential for these cells but does not adequately address the science of these cells and the lingering doubts regarding the ability of these cells to transdifferentiate into other cell types. The final chapters on cellular cardiomyoplasty and transmural laser revascularization are reasonable summaries of the status of these fields to date.

Overall, the book's style is that of a workshop on angiogenic therapies directed at clinicians, with chapters reading more as discrete entities rather than as components of a tightly woven book. I would recommend this book to clinicians who wish a broad understanding of the field in general but not to someone who wishes detailed information on the mechanisms of angiogenesis. The authors and editors should be commended for participating in providing this resource to the field of angiogenesis.

Disclosures

None.

Sanjay Rajagopalan, MD
Cardiovascular Institute
Mount Sinai School of Medicine
New York, NY

(*Circulation*. 2006;113:e84.)

© 2006 American Heart Association, Inc.

Circulation is available at <http://www.circulationaha.org>

DOI: 10.1161/CIRCULATIONAHA.105.580407