The understanding and treatment of dementia remains one of the greatest challenges facing the contemporary clinical neuroscientist. This is obviously not surprising given the complex infrastructure that forms the basis for what we consider the higher brain functions of memory, language, thought, abstract reasoning, motivation, and emotion. Progressive dementia is, by and large, a disorder of the aging brain. Running parallel to the aging of brain tissue is aging of the cerebrovascular system, which is necessary to meet the brain's demand for a large volume of blood flow. Therein lies the problem that has historically been put very simply: is dementia a result of a primary degenerative disease of the brain or a result of a progressive impairment in it's blood supply? The 19th-century view was that dementia resulted from vascular insufficiency. Later, with more sophisticated neuropathology, the concept arose that dementia was caused by a primary neurodegenerative process which attacked cortical neurons. However, well into the latter part of the 20th century, the popular concept that cerebral arteriosclerosis—commonly known as “hardening of the arteries”—was the basis for dementia continued to hold sway. Eventually, however, Alzheimer’s disease became the principal culprit and even found its way into the popular lexicon. Appearing to confirm the neurodegenerative view, there quickly followed the discovery of additional neuropathologic and clinical entities such as Lewy body dementia, frontotemporal dementia, progressive supranuclear palsy, and corticobasal degeneration to name just a few.

As indicated by the editors of this volume, the pendulum appears to have swung too far from vascular dementia. Even while knowledge of the primary degenerative disorders was evolving, more respectable concepts of arteriosclerotic dementia, such as multi-infarct dementia and subcortical dementia, began to emerge. Binswanger’s disease even made a respectable comeback. Until recently however, Alzheimer’s disease and vascular dementia continued to be considered distinctive with a polarization of opinion as to which of these was more important etiologically. As it turns out, the truth may lie somewhere in the middle. The editors of this volume are of this mindset and have collected a group of distinguished experts who provide the clinical and laboratory evidence that vascular dementia is a genuine entity and that a mutually exclusive separation between primary degenerative and vascular dementias is difficult to support. Going further, if one accepts the concept of vascular dementia, the existence of a “mixed dementia” must also be considered. In the end, the question remains as to whether vascular and degenerative dementias simply coexist or whether there is an important pathophysiologic interaction between the two processes. Vascular Dementia: Cerebrovascular Management and Clinical Management lays out the guidelines for understanding this debate and points the way to future research which should clarify the question, lead to better understanding of the cause of these disorders, and produce effective methods for their prevention and treatment.

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The intent of Vascular Dementia: Cerebrovascular Mechanisms and Clinical Management is to address the many recent advances in cardiovascular and cerebrovascular medicine and the impact of these on the lives of older adults by examining the state-of-the-art research on vascular dementia (VaD). A distinguishing feature of this work is its interdisciplinary nature. We have assembled work from contributors in multiple related fields, including both human and animal studies, in order to advance our collective understanding of VaD. A second distinguishing feature is that we have devoted one-third of our text to the examination of the interactions between VaD and Alzheimer’s disease (AD). We believe that this combined approach will enhance patient care, as well as promote future research.

One may ask whether yet another summary of work in the field of VaD is necessary, given the number of review papers and recent texts devoted to the topic. However, it is important to note that research conducted over the recent “Decade of the Brain” has brought to light both consensus and controversy regarding the identity of VaD, and as a result the field is in constant flux. No better example of this could be scripted than the topics of discussion at a recent international conference on VaD. Attended by many prolific contributors to the field, the debates were charged and the range of discussion was provocative. In one open forum debate, the very existence of VaD as a construct was under question. Data from autopsy studies were presented which argued that pure VaD was such a rare phenomenon that the construct barely warranted clinical and research attention. By contrast, in a separate debate, the discussion focused on whether all cases of sporadic AD were manifestations of VaD. This bipolar conceptualization of VaD is the primary impetus behind our book.

In addition, though AD has been the central focus of research for several decades, the pendulum has begun to move towards a greater interest in cerebrovascular disease. This likely reflects the ever-growing population of older adults with cerebrovascular disease, as well as studies conducted in recent years describing important interactions between vascular disease and the expression of cognitive deficits in AD. There is now a growing consensus that clear, clinical, and pathological distinctions between these two conditions sometimes cannot be made in individual patients. We are certainly not the first group to describe this pending paradigm shift, as others (i.e., Roman, Hachinski, et al.) have offered this observation in public forum. However, it is from our own observations and empirical studies that we came to appreciate this conceptualization of dementia research, and eventually concluded that the time was right to synthesize the literature in an effort to move science forward.

Vascular Dementia: Cerebrovascular Mechanisms and Clinical Management is divided into six sections. Part I is focused on introducing VaD as a construct. Part II describes the basic mechanisms associated with aging that may have an important role in the development of VaD. Part III identifies the impact of VaD on cognitive status, psychiatric health, and the ability of patients to complete important activities of daily living. Part IV describes the application of neuroimaging methods to investigate VaD, with particular attention directed toward both functional and structural imaging methods. Part V is devoted to the topic of interactions
between VaD and AD. Finally, Part VI reviews pharmacological management of VaD. This section also addresses the impact of VaD on perceived quality of life of patients and caregiver burden, two rarely addressed issues in the scientific community.

We developed the book to be of interest to both clinicians and basic scientists. The topics covered are broad in nature and capture work from both the bench and the exam room. Chapters are also provided that address issues likely new to those who practice or conduct research within a circumscribed specialty area. The contributors have skillfully identified the important discoveries of the previous years, explored where this field of research is currently headed, and emphasized the critical topics that require a more intensive research focus. Overall, we hope the book will serve as a valuable reference for the current state of knowledge regarding VaD as well as a guide for future studies.

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