Jay D. Coffman, MD
1928–2006

Richard A. Cohen, MD; Jonathan L. Halperin, MD; Mark A. Creager, MD; Robert T. Eberhardt, MD

Jay D. Coffman, Professor of Medicine and Chief of the Peripheral Vascular Section at Boston University School of Medicine, died on December 12, 2006, of adenocarcinoma of the colon at the age of 78 years. His research accomplishments focused on the physiology and pathophysiology of peripheral blood flow, and his career exemplified the ideal of translating research findings directly to the care of patients. He fostered understanding atherosclerosis as a systemic disease and nurtured the discipline of vascular medicine as a clinical subspecialty.

Born in Quincy, Mass, as the youngest of 4 siblings, he was educated at Harvard College and at the Boston University School of Medicine, earning his doctoral degree in 1954. After internship and residency training in internal medicine at Massachusetts Memorial Hospital, he trained in cardiovascular research in the Department of Cardiorespiratory Diseases at the Walter Reed Army Institutes of Research in Washington, DC. In 1960, he joined the faculty at Boston University School of Medicine. He remained there until his retirement from patient care in 2001, although he continued as a research consultant, scientific author, and editor until a few months before his death. He was elected chairman of the Council on Circulation of the American Heart Association in 1975 and was a founder of the Society for Vascular Medicine and Biology, serving as president from 1992 to 1994.

Dr Coffman was an influential medical investigator, an outstanding clinician, and a treasured educator and mentor. A pioneer in the emerging field of peripheral vascular medicine, he conducted seminal studies of limb circulation, investigating blood flow during reactive hyperemia in normal subjects and in patients with intermittent claudication and making detailed measurements of digital skin circulation in patients with Raynaud’s phenomenon. His work exemplified the principles of what is now called translational research. Early in his career, he established a pattern that would persistently characterize his scientific approach, bringing relevant basic studies of physiology to expand the understanding of human disease.

He fulfilled his military obligation in the US Army reserve, collaborating with Dr Donald Gregg at the Walter Reed Army Institutes in the early 1960s. Joining a phalanx of cardiovascular investigators in Washington, he and Gregg characterized oxygen and blood flow repayment to the myocardium after periods of ischemia in open-chest dogs, establishing the close relationship between oxygen consumption and postischemic blood flow.1 Unlike exercising skeletal muscle, in which blood flow repayment closely matched the deficit that accumulated during the ischemic phase,2 myocardial flow repayment exceeded the deficit, consistent with collateral recruitment in the heart.

On returning to Boston, Jay established a dog research laboratory but quickly translated what he learned to studies of exercising normal and ischemic human calf muscle. He investigated the pharmacological effects of bradykinin, nicotine, and epinephrine on calf muscle and skin blood flow. From these physiological studies came many of the principles that govern modern concepts of the peripheral circulation, including the insight that sympathectomy resulted in no advantage for either intermittent claudication or ischemic skin ulcers because blood vessels were already maximally dilated as a result of ischemia. A very productive partnership with the vascular surgeon Dr John Mannick led to publications showing that relief from claudication resulted only when exercise-induced hyperemia was restored through bypass grafting, whereas only minimal increases in blood flow...
were required to heal skin ulcers. Their authoritative book in the 1970s delineated an approach to the management of patients with peripheral arterial disease that persists to the present day. He emphasized that patients with intermittent claudication do not have as benign a prognosis as had been thought, primarily because of coincident coronary and cerebrovascular disease. His research proved the lack of efficacy and stopped the widespread use of vasodilator drugs for claudication then in vogue. In a widely referenced contribution to the New England Journal of Medicine written with vascular surgeon Dr Frank Logerfo, he outlined the care of peripheral vascular disease and foot ulcers in diabetic patients that emphasized the importance of large-artery atherosclerosis over microvascular disease.

His interest in skin blood flow stimulated a second area in which he achieved international recognition. Arising from a collaboration with rheumatologist Dr Alan Cohen, he began to study Raynaud’s phenomenon and fingertip blood flow. As had been the case with leg blood flow, he and his fellows published studies describing responses to physiological and pharmacological stimuli, including cold exposure, mental stress, serotonin, and α-adrenergic agonists. From these studies came an understanding of Raynaud’s disease, demonstrating hypersensitivity to α2-adrenergic and serotonergic agents in the digital vasculature. He kept up with the times, studying the role of nitric oxide–releasing vasodilators and providing the basis for the therapeutic efficacy of ganglionic blocking agents, calcium channel inhibitors, and serotonin antagonists in patients with Raynaud’s phenomenon. The knowledge gained from these and other investigations was detailed in his comprehensive book on Raynaud’s phenomenon, which clarified the pathophysiology of this complex disorder while providing practical management strategies useful to clinicians and patients alike.

His research and clinical activities were closely aligned, and he was one of a small cadre of individuals who embraced vascular medicine as a distinct clinical discipline. He created the Peripheral Vascular Section at Boston University Medical Center and dedicated his career to the care of patients with vascular disease. He emphasized a systematic approach to the diagnosis and treatment of vascular disease and worked closely with vascular surgeons and radiologists to establish an interdisciplinary approach to patient care that presaged many of today’s vascular centers. Dr Coffman recognized that vascular medicine was an emerging field likely to flourish as knowledge of fundamental mechanisms of vascular disease biology advanced. He was a founder and President of the Society for Vascular Medicine and Biology, which has become an important forum for scientific and clinical communications among vascular physicians and scientists. His work encouraged the mentoring and training of a new generation of specialists in vascular medicine.

Even considering his accomplishments as a clinician and scientist, his skills as a diagnostician, and the power and balance of his clinical judgment, we remember him most as a great teacher and role model. He transmitted to each of his trainees a respect for the art and science of medicine “from the ground up,” based firmly in careful observation, accurate recording, unbending intellectual honesty, and professional integrity. These tenets applied equally in research and clinical training. In the peripheral vascular laboratory, he emphasized the use of technology as an extension of the eyes, ears, and hands of the scientific observer. Trainees were taught to fabricate instruments like the plethysmograph from simple materials; to perform laboratory measurements in person, aided but not replaced by the technologist; and to complete statistical analysis with pen, paper, and a calculator rather than deliver the data into a “black box” of biostatistical computing, thereby ensuring accuracy, valid inference, scientific integrity, and comprehensive understanding. At the bedside, he stressed humility, not limited to his interpersonal relationship with patients and other physicians but encompassing the open-minded objectivity that kept him alert to the earliest signs of disease and that led inexorably to the correct diagnosis. When it came to symptoms and physical signs, he invariably “called them as he saw them” during every visit to every patient every day. Although steeped in traditional values, his approach was at the same time cutting edge, incorporating the emerging literature tempered by the critical mind of the quintessential physician-scientist.

His values were cast by devotion to his profession, his patients, and his family. Outside of medicine, his interests were simple and were based at home. He was an avid fisherman and gardener, played piano since youth, and taught his children to play music. He taught each of his 4 children and grandchildren to fish and how to clean the catch. He was famous for his fish chowder, grew vegetables, and made squash bread and raspberry jam. Those of us who were fortunate to have entered his inner circle will remember his teachings all the days of our lives and measure our own success by how well we can follow in his footsteps.

References

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Circulation. 2007;115:2876-2877
doi: 10.1161/CIRCULATIONAHA.107.708131
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://circ.ahajournals.org/content/115/22/2876

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