

Preface



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Guest Editor

In August of 2006 in *Neurologic Clinics of North America*, I asked the question “What is psychoneuroimmunology (PNI)?” I noted that the National Library of Medicine defined PNI as “the field concerned with the interrelationship between the brain, behavior and the immune system.” To my chagrin, I discovered that the Encarta World English Dictionary by Microsoft Corporation defined PNI as “a branch of medicine concerned with how emotions affect the immune system.” This latter definition seriously misrepresented the field of PNI and colored it as some sort of pseudoscience. In addition, Wikipedia had only 337 words devoted to the subject, and none of them were practically informative, except, perhaps, that the term *psychoneuroimmunology* was “coined by Robert Ader and Nicholas Cohen at the University of Rochester in 1975,” which is where I attended medical school and received my postgraduate training in pathology. Today, however, things are different. Wikipedia now has a robust description of the field, and even the publishers of medical education and reference textbooks (usually a lagging indicator of medical advances) are beginning to see the importance of PNI.

In 2006, an all-site content search of McGraw-Hill’s AccessMedicine, which contains the contents of 16 respected medical textbooks, including Harrison’s Online, provided only one “hit” for the term *psychoneuroimmunology*. This reference was contained in *Adams and Vectors’ Neurology* in a discussion of the evolution of the study of psychiatric disorders and the apparently deleterious impact that the originating concept of “psychosomatic medicine” in the 1930s had on the treatment of mental illness. Unfortunately, this purported link between PNI and “psychosomatic” disorders is still included. On the positive side, McGraw-Hill’s *Current Medical Diagnosis and Treatment 2009* now includes a positive description of PNI in its section on mind-body medicine, noting that “The new field of psychoneuroimmunology has documented, at the physiologic level, the powerful effect of the mind on the nervous, endocrine, and immune systems, and vice versa. Studies have demonstrated that certain forms of mental training, in addition to affecting health, can affect brain function and even structure, leading to a reevaluation of currently held beliefs about neuroplasticity.”

Current clinical practice, especially by means of complementary and alternative medicine approaches, is using and translating the basic science of PNI and capitalizing on the bidirectional communication that occurs between the central nervous system (CNS) and the peripheral immune system. Critical to improving our armamentarium of mind-body-based therapeutics is to recognize that immune organs (lymph nodes, spleen, and thymus) are innervated and communicate with the CNS by means of neuronal pathways. As one example, efferent vagus cholinergic nerve terminals in the spleen are triggered during bacterial infection, and the resultant acetylcholine suppresses macrophage activation, thus forming the “cholinergic anti-inflammatory reflex.” Similarly, the afferent vagus conveys proinflammatory cytokine-dependent information about the activation status of the peripheral immune system to the nucleus of the solitary tract, resulting in the classic disease symptoms of fever, lethargy, drowsiness, and loss of appetite. These fundamental biologic concepts are essentially absent from medical texts, including teaching and reference books in anatomy, medicine, neurology, pathology, and surgery, although, *Kaplan and Sadock’s Comprehensive Textbook of Psychiatry* notes autonomic nervous system innervation of the peripheral immune organs.

So, what is PNI? It is a rapidly developing field of study dedicated to understanding why illness occurs and why many individuals have trouble recovering from their affliction. As our knowledge of the myriad physiologic pathways activated before, during, and after sickness expands, mind-body medicine should translate these discoveries into innovative new strategies that should ward off, retard, and overcome disease.

I am pleased to present to the readers of *Immunology and Allergy Clinics of North America* this important issue reprinted from *Neurologic Clinics of North America*, with updates included from many of the authors.

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