

REPORT 5 OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH (A-10)
Maldynia: Pathophysiology and Non-pharmacologic Treatment
(Resolution 525, A-08)
(Reference Committee E)

EXECUTIVE SUMMARY

Objective. The Council previously examined the issue of neuropathic pain, particularly the role of pharmacotherapy for symptomatic management. This report addresses recent findings on the pathogenesis of neuropathic pain. Per the request of Resolution 525 (A-08), attention is devoted to the concept that development of maladaptive pain (maldynia) justifies its classification as a disease. Additionally, the scope of non-pharmacologic approaches employed in patients with maladaptive pain is discussed.

Methods. English-language reports on studies using human subjects were selected from a MEDLINE search of the literature from 1995 to March 2010 using the search terms “maldynia” or “neuropath*,” in combination with “pain,” “pathophysiology,” “diagnosis,” and “treatment.” In addition, the Cochrane Library was searched using the term “pain,” in combination with “neuropathic” or “neuropathy” and “psychologic,” “stimulation,” “spinal cord,” “acupuncture,” or “hypnosis.” A total of 406 articles were retrieved for analysis. Articles were selected for their ability to supply information about the pathogenesis of neuropathic pain, and modes of therapy beyond pharmacologic intervention. When high-quality systematic reviews and meta-analyses were identified, they formed the basis for summary statements about treatment effectiveness. Additional articles were identified by manual review of the references cited in these publications. Further information was obtained from the Internet sites of the American Pain Society (www.ampainsoc.org), American Academy of Pain Medicine (www.painmed.org), American Academy of Pain Management (www.aapainmanage.org), and the American College of Occupational and Environmental Medicine (www.acoem.org).

Results. Nociceptive pain is an alarm signal mediated by specialized primary sensory neurons that respond to sufficiently intense thermal, mechanical, or chemical stimuli and transmit signals via well-defined pathways in the central nervous system. Nociceptive pain is triggered and maintained by the presence of noxious stimuli. When neural tissues in the peripheral or central nervous system are directly damaged or become dysfunctional a different sequence of events unfolds. Under these conditions pain can manifest and eventually persist in the absence of typical nociceptive generators. Such pain is maladaptive in the sense that it occurs in the absence of ongoing noxious stimuli, does not promote healing and repair, and responds poorly to conventional pain medications. According to this viewpoint “pain becomes the disease process itself” and is termed maldynia. This condition (as defined) can result from neural injury or inadequately managed persistent nociceptive stimuli.

Conclusion. Neural damage to either the peripheral or central nervous system provokes maladaptive responses in nociceptive pathways that generate and amplify spontaneous pain. Multiple processes are involved, including peripheral and central sensitization, ectopic activity, neuronal cell death, disinhibition, altered gene expression, and abnormal sprouting and cellular connectivity. A series of neuro-immune interactions underlie many of these mechanisms. Imaging studies have shown that several pain conditions associated with neural injury are characterized by functional, structural, and chemical changes in the brain. As such, maldynia is a multidimensional process that may warrant consideration as a chronic disease not only affecting sensory and emotional processing, but also producing an altered brain state, based on both functional imaging and macroscopic measurements. The absolute clinical value of this definition is not established.

RECOMMENDATION

The Council on Science and Public Health recommends that the following statement be adopted in lieu of Resolution 525 (A-08) and the remainder of this report be filed.

That our American Medical Association disseminate Council on Science and Public Health Report 5 (A-10), "Maldynia: Pathophysiology and Nonpharmacologic Approaches," to physicians, patients, payers, legislators, and regulators to increase their understanding of issues surrounding the diagnosis and management of maldynia (neuropathic pain). (Directive to Take Action)