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Opioids for Persistent Noncancer Pain  177
Gary McCleane and Howard S. Smith

Opioids are extensively used in the management of all types of pain and their use is underpinned by extensive trial evidence and an abundance of practical experience. We are still amassing insight into how they achieve their pain-relieving effects, however, and this understanding becomes more complex as time progresses and shows that opioids are medications with complex and diverse central and peripheral nervous system effects. Despite the 200 years that have passed since the chemical isolation of morphine, every year brings new understanding of the mode of action, propensity to cause side effects, and appropriate clinical use of opioids. This article concentrates on this “new” evidence as disclosed by recent publications.

Opioid Tolerance and Hyperalgesia  199
Grace Chang, Lucy Chen, and Jianren Mao

Opioids have been successfully used for the management of acute and cancer-related pain. Concerns regarding side effects, tolerance, dependence, addiction, and hyperalgesia have limited the use of opioids for the management of chronic nonmalignant pain. This article will review updated information from both clinical and preclinical studies regarding opioid-induced hyperalgesia, tolerance, and dependence. The implications of these issues in clinical opioid therapy also will be discussed.

Documentation and Potential Tools in Long-Term Opioid Therapy for Pain  213
Howard S. Smith and Kenneth L. Kirsh

The field of pain medicine is experiencing increased pressure from regulatory agencies and other sources regarding the continuation,
or even initial use, of opioids in pain patients. Therefore, it is essential that pain clinicians provide rationale for engaging in this modality of treatment and provide ample documentation in this regard. Thus, assessment and documentation are cornerstones for both protecting your practice and obtaining optimal patient outcomes while on opioid therapy. Several potential tools and documentation strategies are discussed that will aid clinicians in providing evidence for the continuation of this type of treatment for their patients.

Myofascial Trigger Points 229
Elizabeth Demers Lavelle, William Lavelle, and Howard S. Smith

Painful conditions of the musculoskeletal system, including myofascial pain syndrome, constitute some of the most important chronic problems encountered in a clinical practice. A myofascial trigger point is a hyperirritable spot, usually within a taut band of skeletal muscle, which is painful on compression and can give rise to characteristic referred pain, motor dysfunction, and autonomic phenomena. Trigger points may be relieved through noninvasive measures, such as spray and stretch, transcutaneous electrical stimulation, physical therapy, and massage. Invasive treatments for myofascial trigger points include injections with local anesthetics, corticosteroids, or botulism toxin or dry needling. The etiology, pathophysiology, and treatment of myofascial trigger points are addressed in this article.

Intra-Articular Injections 241
William Lavelle, Elizabeth Demers Lavelle, and Lori Lavelle

Intra-articular injections are one method that physicians may use to treat joint pain. This method offers direct access to the source of pain for the troubled patient. Substances ranging from steroids to hyaluronic acid have been injected successfully into the various joints of the body in an attempt to provide relief for chronic joint pain. Anesthesiologists and orthopedic surgeons have begun to use intra-articular injections of local anesthetics for postoperative analgesia. The history, agents, and methods of intra-articular injections are reviewed.

Intrathecal Analgesia 251
Steven P. Cohen and Anthony Dragovich

Since the first use of intrathecal (IT) drug infusion systems in the early 1980s, these delivery systems have undergone numerous revisions making them more tolerable, easier to program, and longer lasting. Concurrent with technological advances, the indications for IT pump placement have also been continuously evolving, to the point where the most common indication is now noncancer pain. This article provides an evidence-based review of the indications,
efficacy, and complications of IT drug therapy for the most commonly administered spinal analgesics.

**Interventional Approaches to Pain Management**
John D. Markman and Annie Philip

This article reviews the evidence for several common interventional techniques for the treatment of chronic pain, including: intraspinal delivery of analgesics, reversible blockade with local anesthetics, augmentation with spinal cord stimulation, and ablation with radiofrequency energy or neurolytic agents. The role of these techniques is defined within the framework of a multidisciplinary approach to the neurobehavioral syndrome of chronic pain. Challenges to the study of the analgesic efficacy of procedural interventions are explored, as are the practical issues raised by their clinical implementation, with the aim of helping nonspecialist physicians identify the patients most likely to benefit from these approaches.

**Invasive and Minimally Invasive Surgical Techniques for Back Pain Conditions**
William Lavelle, Allen Carl, and Elizabeth Demers Lavelle

Back pain is a ubiquitous problem for developed countries. It is a source of disability for society and is a financial drain through lost wages and productivity. The treatment of spine-related pain has changed over the years; minimally invasive approaches are now favored. Despite this trend, surgeons still rely on decompressions of compressed neurologic structures and the fusion of painful motion segments. The history of treatments of spine-related pain as well as modern and minimally invasive techniques are reviewed.

**Vertebroplasty and Kyphoplasty**
William Lavelle, Allen Carl, Elizabeth Demers Lavelle, and Mohammed A. Khaleel

Vertebral compression fractures occur more frequently than hip and ankle fractures combined. These fragility fractures frequently result in both acute and chronic pain, but more importantly are a source of increased morbidity and possibly mortality. Percutaneous vertebroplasty offers a minimally invasive approach for the treatment of vertebral compression fractures. The history, technique, and results of vertebroplasty and kyphoplasty are reviewed. Both methods allow for the introduction of bone cement into the fracture site with clinical results indicating substantial pain relief in approximately 90% of patients.

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