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Dialing down opioid use

Alternative treatments

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The opioid crisis currently gripping the U.S. presents significant challenges for the treatment of chronic pain. For much of the 2000s, opioids were liberally prescribed to treat pain, but in recent years, it has become clear that prescription opioids may lead to abuse, addiction, and overdose death in a certain population of chronic pain patients. The risks associated with opioid treatment have forced patients dealing with chronic pain—and physicians attempting to treat that pain—to look for alternative treatment options. Fortunately, a variety of alternative, non-addictive pain treatments are available and will be discussed in this article.

How did we get here?

In the 1990s, the under-treatment of acute and chronic pain in the U.S. became recognized as a major public health problem. In response, Congress ushered in the “Decade of Pain Control” in 2000 at the same time that health care regulators designated pain to be the “Fifth Vital Sign” and prominent physicians advocated for more liberal opioid prescribing. This trend toward more aggressive pain management was bolstered by the pharmaceutical companies as they developed and marketed powerful new opioid formulations. As a result, from 2000 to 2010, the rate of opioid prescribing, the number of opioids distributed, and the average prescription size all increased markedly as deaths from opioid overdoses ramped up in parallel.

By 2012, the U.S. was in the midst of a full-blown opioid crisis that persists today. According to the recently published Surgeon General’s Spotlight on Opioids, opioid overdoses killed more than 48,000 Americans in 2017, and deaths from opioids in the U.S. have surpassed deaths from motor vehicle accidents and shootings combined in every year since 2013. Although illicit fentanyl is now a major contributor to the current crisis, prescription opioids administered for pain have been implicated in causing the addictions that have led to many opioid overdose deaths.

Patients with chronic pain present with a broad continuum of different problems, ranging from nociceptive (biological) pain caused by severe inflammatory conditions like rheumatoid arthritis, to neuropathic pain caused by damage to the nervous system, to pain behaviors driven primarily by psychological mechanisms and personality disorders. Sorting out the causes for chronic pain and developing an effective treatment plan are challenging tasks

for physician pain specialists. Regardless of the cause for pain, it has become increasingly apparent that prescribing opioids to treat chronic pain may lead to addiction in susceptible patients and overdose death in some of these patients. And most experts agree that the liberal opioid prescribing practices of the past have contributed to our current national opioid crisis.

Options beyond opioids: multidisciplinary intervention

Fortunately, the science and technology of pain management has advanced over the past two decades to the point where there are now alternatives to opioid management for chronic pain that may provide better pain relief with less risk. Physicians in the new medical specialty of interventional pain management (CMS designation 09) have pioneered the use of minimally invasive, image-guided procedures to identify and treat the physical generators of pain and utilize high tech, fully implantable pain control systems for extreme pain that proves unresponsive to more conservative measures. Multidisciplinary, interventional approaches coordinate these pain-relieving procedures with physical therapy and behavioral health treatments to effectively treat chronic pain in a holistic fashion with less reliance on opioids.

Nura is a multidisciplinary, interventional pain clinic in the Minneapolis/St. Paul area. When a patient is referred with complex chronic pain, we start with a comprehensive, pain-focused evaluation to create a tailored treatment plan that best fits the patient’s needs. We begin by optimizing medication management using non-addicting medications such as NSAIDs, acetaminophen, anti-depressants, and nerve-stabilizing drugs like gabapentin.

New drugs in development

There is intense international research within academic institutions and large pharmaceutical companies aimed at developing highly selective drugs to block specific pain pathways with minimal side effects. Nura participates in research studies on some of these investigational treatments, giving selected patients access to new and novel therapies. The monoclonal antibody tanezumab is one such drug that belongs to an investigational group of pain medications targeting nerve growth factor, a protein involved in the growth of nerve cells. In 2012, U.S. regulators banned monoclonal antibodies to treat chronic pain because of a concern that medicines targeting nerve growth factor could worsen osteoarthritis in a small percentage of patients. That ban has recently been lifted

and tanezumab, along with other highly targeted oral and parenteral drugs, are currently being evaluated to treat lower back and cancer pain, as well as other types of chronic pain in the U.S.

In the future, medications may treat pain so effectively that other methods of pain relief will become largely unnecessary. At present, however, medications alone are often not sufficient to manage complex chronic pain, and medication side effects are sometimes as bad as the pain these medicines are treating. In comparison to opioids, approximately 100,000 U.S. patients are hospitalized, and 16,500 patients die each year from NSAID-related complications, whereas acetaminophen toxicity is responsible for 56,000 emergency department visits, 2,600 hospitalizations, and 500 deaths each year. The take-home message is that medication management of chronic pain has limited efficacy and is associated with significant morbidity and mortality.

Integrating non-drug treatments

If medications are not adequately controlling pain or are causing untenable side effects, interventional techniques can be utilized for those patients with identifiable structural abnormalities contributing to pain. The goal of the interventional pain specialist is to identify the physical generators of pain and to precisely target and treat them to the greatest extent possible using image-guided, minimally invasive procedures. At Nura, we coordinate interventional procedures with physical therapy and behavioral health treatments as necessary for a comprehensive, multi-point approach. For those who fail to respond to therapeutic procedures, physical therapy, and behavioral health treatments, we consider implantable pain control options.

We believe in moving from simple to more complex treatments as necessary to reach our goals of reducing pain and improving function. For those patients who respond to non-addictive medications, physical therapy, chiropractic adjustment, and/or complementary medical treatments such as acupuncture, we encourage the patient to continue these low-risk therapies. For pain that does not respond to conservative, non-invasive treatments, we first consider diagnostic and therapeutic procedures such as targeted spinal steroids and radiofrequency nerve ablations. When these minimally invasive procedures fail, we consider implantable pain control systems as last-resort alternatives to long-term oral or skin patch opioids.

Implantable pain control options include spinal cord stimulators that generate electrical signals to block pain transmission in the spinal cord and pain pumps that block pain receptors within the spinal cord using small doses of targeted medications delivered by an intrathecal catheter. Both options involve a trial of the therapy and, if successful, a minimally invasive outpatient surgery to implant the permanent delivery system. Spinal cord stimulation is often tried first because it is an epidural system that is not in direct contact with the spinal cord and does not involve medications. Pain pumps are somewhat higher risk because they utilize an intrathecal catheter that deposits medication directly onto the spinal cord to provide targeted drug delivery (TDD).

TDD eliminates addiction potential

Although TDD is considered only as a last resort, it is perhaps the most powerful and effective treatment available for refractory, intractable pain from cancer, multi-level spinal degeneration, and other severe conditions. TDD is a reversible, non-destructive method for controlling severe chronic pain that moves patients from the “fix it” path of more surgeries and more medical interventions to the “quality of life” path of reduced pain and improved function. Pump medications are “targeted” to the spinal cord, rather than the brain, and block pain at the spinal cord level, thus keeping the brain free from drug effects.

A typical pump infusion consists of an opioid (fentanyl, morphine, and/or hydromorphone) mixed with a local anesthetic (bupivacaine). These drug admixtures are continuously infused at low dose into the spinal fluid at the spinal level of maximal pain, blocking pain receptors within the spinal cord and avoiding brain drug effects such as mental clouding, somnolence, and confusion. Intrathecal opioids are not absorbed to any great extent into the bloodstream and therefore exert far weaker systemic effects compared to drugs administered by any other route. Although physical dependence may develop with pump opioids and withdrawal may occur if the pump infusion is abruptly stopped, there is no addiction potential with pump opioids because there is no euphoria and no “high” feeling. Furthermore, for those pump patients with severe physical pain and active addiction, the physician controls the drugs within the pump and they cannot be abused and/or diverted by the patient.

The pump itself consists of three components in one package: a mechanical pump to deliver medications continuously over a period of years, a drug reservoir to hold several months of medication inside the pump to be delivered slowly over time, and a computer chip that can be programmed to deliver the medications to meet patient needs and desires.

Once the pump is implanted, the patient begins a gradual transition from systemic oral or skin patch opioids to targeted spinal opioid/local anesthetic solutions so that opioids are administered primarily by the spinal route within three to six months. The average pump in our practice is filled about once every two months, at home or in the clinic, and continuously infuses spinal opioid at about one-tenth to one-hundredth of the usual oral opioid dose previously required. In addition to the continuous infusion capability, the pump comes with a remote-control device the patient may use to deliver pre-programmed boluses of pump medications that take the place of breakthrough oral pain pills. We recently polled our pump patients and found that the vast majority of them felt the pump was a very helpful intervention that had changed their lives for the better.

Conclusion

Reducing pain down to tolerable levels with medications, injections, and/or implantable pain control systems is an important first step in pain management, but improving physical functioning through ongoing physical therapy and managing anxiety and depression with behavioral techniques are equally important for long-term recovery. Although there is no single best treatment for most complex chronic pain, combining interventions, physical therapy, and psychology-based treatments in a coordinated fashion offers pain patients the best chance to lead a more productive life free from opioids.

David Schultz, MD, is the medical director and founder of Nura pain clinics. Dr. Schultz is a board-certified anesthesiologist with additional board certification in pain medicine from the American Board of Anesthesiology, the American Board of Interventional Pain Physicians, and the American Board of Pain Medicine. He has been a full-time interventional pain specialist since 1995. He is past president of the American Society of Interventional Pain Physicians (ASIPP) and has taught physician courses in the field of interventional pain management for the past 25 years as an instructor and course director for ASIPP, International Spinal Injection Society (SIS), Medtronic, and Abbott. He is a prolific author of clinical articles and book chapters, a frequent speaker at national meetings, and a principal investigator in pain research. ☐