Combination transdermal non-opioid, non-narcotic treatment for pain utilizing SpeedGel Rx® and LiDORx®

By Robert L. Wilbur, PharmD, CPh

The treatment of pain is as complex as the origin of the pain itself. Though many studies and position papers highlight the need for a comprehensive, stepwise approach to pain management, too many prescribers have opted for opiates as the initial modality. This may be due to expediency, lack of sufficient time to fully assess the patient, or acquiescence to patient demands but it has fueled a growing epidemic.

Prescription opioid use for relief of noncancer pain has risen significantly in the last 15 years, contributing to a quadrupling of opioid overdoses and prescription opioid-related deaths. Data from the CDC document indicate that more than 70,000 people in the US died of drug overdose in 2017, of which 68% involved an opioid.[1]

This crisis is resulting in heightened attention by health care professionals and organizations, law enforcement, and the government. Last year, the Centers for Disease Control and Prevention (CDC) released new opioid prescribing guidelines[2]; the Food and Drug Administration (FDA) added a black box warning for prescribing opioids and benzodiazepines[3]; US Surgeon General Vivek Murthy sent a letter to all US physicians asking them for commitment to "Turn the Tide" on the opioid crisis[4]; and the White House convened a summit of national leaders on this subject.

The general consensus is that clinicians must consider alternative therapies that will limit or decrease the utilization of opioids. However, acute and chronic pain are not identical in etiology, evaluation, and management, although overlap exists.[5] The treatment of acute pain is mostly targeted and straight forward but the management of chronic pain is complex and at times controversial.[6]

The treatment of pain is meant to eliminate, modulate, or mute the pain signal and diminish the perception of pain in a patient. The approach to a patient's pain must be individualized and multimodal. Depending on the pain severity, treatment must be tailored using multiple tools.

Two areas that lend themselves to effective non-opiate treatment are musculoskeletal and wound pain. Up until recently, the best available option was non-steroidal anti-inflammatory drugs (NSAIDs). Though often effective, they do bring with them the potential for serious adverse drug reactions (ADRs) and drug-drug interactions. These include but are not limited to allergic reactions, bleeding, kidney failure and rarely liver failure. According to several studies, NSAIDs cause an increased risk of serious, even fatal, stomach and intestinal adverse reactions such bleeding, ulcers and perforations. These events can occur at any time during treatment and without warning symptoms. Due to NSAIDs' effects on clotting time, it is necessary to stop their use two weeks prior to surgery. In addition, the risk of myocardial infarctions and cerebral vascular hemorrhage in patients with a history of cardiovascular disease prompted the FDA to require a Black Box warning on NSAID products. SpeedGel Rx® is not associated with the NSAID class of drugs and can be used in combination with oral NSAID treatment without the risk of increasing the potential for NSAID ADRs unlike diclofenac gel which is an NSAID and can increase the risk of related ADRs. Newer, transdermal medications, such as Astero®, SpeedGel Rx®, and LiDORx®, can bypass these concerns, treat the underlying condition and still deliver effective pain control.

Musculoskeletal (MSK) pain is most commonly a result of direct tissue trauma and/or overuse injury. These injuries involve a prolonged inflammatory response which produces a constellation of chemical mediators which increases the stimulation of nociceptors or lowers their activation threshold resulting in a prolonged sensation of pain. Treatment centers around reducing the inflammation, and the resulting mediators, at the site of injury during the healing process. Systemic NSAIDs typically require aggressive dosing at frequent intervals putting the patient at elevated risk of class associated ADRs. Ineffective dosing often results in the addition of an opiate to make the patient more comfortable. However, opiates have been shown not as effective for chronic MSK pain as once thought. A 2014 Cochrane Review found opioids unproven for the management of chronic low back pain.[7]

A clinically-proven safe and effective alternative is SpeedGel Rx®, a proprietary blend of several natural ingredients at prescription strength. SpeedGel Rx® is a patented, topically applied transdermal gel that acts locally to reduce inflammation, bruising, and associated pain. A recent study by the Andrews Institute evaluated this product postoperatively on patients requiring ACL reconstruction surgery, measuring patient's perception of pain and evaluating the use of opiates for pain control. Results show a 19% reduction of pain at Day 7 and 26% Day 21. Improvement in Range of Motion in comparison to placebo results are 12.8% at Day 14 and 7.2% Day 28. As a result of the patients' experience, there is a faster pain resolution with SpeedGel Rx® while they correspondingly demonstrated less need of narcotics.[8] SpeedGel Rx® has also been shown to have positive effect on pain

associated with bruising and time for bruise resolution,[9] and specific SpeedGel Rx® constituents have been shown to shorten the process of acute inflammation as well as increasing tensile strength and collagen deposition in healing skin wounds.[10]

SpeedGel Rx® is effective in the management of pain associated with musculoskeletal injuries and is non-narcotic and has no neurocognitive effects, allows patients to return to normal activities of daily living including operating equipment and machinery and returning to work. By decreasing inflammation and associated pain, SpeedGel Rx® has been clinically proven to lessen the use of more high-risk medications, such as opiates.

By acting on inflammation and bruising, SpeedGel Rx® treats the underlying cause of the pain to heal the injury. However often times more pain relief in the form of an analgesic is required. SpeedGel Rx® is safe to use in conjunction with LiDORx® as a complimentary non-opioid, non-narcotic analgesic.

The fastest acting Lidocaine product on the market is LiDORx®, a transdermal medication containing lidocaine 3%. LiDORx® overcomes lidocaine's poor dermal absorption characteristics with the use of a patented transdermal delivery system. Lidocaine is a well-known topical anesthetic in common use but due to poor transdermal absorption characteristics, has only limited effects.

Pharmacokinetic evaluations of LiDORx® using animal models revealed that 74% of the total dose of Lidocaine applied was detected in the plasma over 6 hours. Therefore applying the maximum daily dose of LiDORx® over a 12-hour period would result in an absorption of approx. 88.8mg of Lidocaine. Compared to Lidocaine 5% Patch, that have a documented absorption of 3% over 12 hours, the maximum daily dose of 3 Patches would only results in approx. 63mg of Lidocaine crossing the skin barrier and available for pain relief.[11] Also in comparison with Lidocaine 5% Patch, LiDORx® can be applied to areas where there is motion and/or anatomically challenging sights such as neck, back, shoulders, elbows, forearms, knees and ankles.

In an additional clinical study, the onset of anesthesia using LiDORx® was measured in normal healthy adults.[12] Results indicate that over 55% of the subjects experienced anesthesia within 6 to 10 minutes compared to other commercially available lidocaine and combination products that can take over 60 minutes to achieve sufficient anesthesia.

Often times, pain can result from direct stimulation of peripheral pain receptors by inflammatory mediators, from tissue damage, and from the swelling that occurs as part of the inflammatory response.[13,14] The fast acting LiDORx® initiates rapid pain relief as the SpeedGel Rx® works to reduce the local inflammation and bruising thereby provides longer term pain relief and lessens the need for systemic pain medications including opiate-based drugs.

In summary, pain management requires a comprehensive approach to the patient and the origin of the pain. By using a stepwise approach, beginning with local therapy and medications at the site of injury, systemic ADRs (Adverse Drug Reactions) can be eliminated. In the event that systemic medications including opioids are needed, clinicians can reduce the amount of opiate usage and expedite weaning the patient off of opioid drugs. Newer drugs such as LiDORx® and SpeedGel Rx®, provide the clinician with effective first step and chronic treatment options for the most common presentations of pain and can be safely used together. Additionally, both SpeedGel Rx® and LiDORx® can safely be used in combination with an oral NSAID treatment without the risk of increasing the potential for NSAID ADRs.

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