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Editorial

Current Drug Therapy in Pain Management

Pain is often known as the fifth vital sign. It is an unpleasant sensation triggered in the nervous system as a result of a stimulus, which can be in the form of an injury, a disease, or even a medical procedure (post-operative pain). Effective and timely management of pain is important as untreated pain causes discomfort and affects the quality of life of a person. The criteria for selecting a drug therapy for pain management includes the diseased state, severity and duration of pain (acute/chronic), risk to benefit ratio, drug dependency, drug interactions, as well as the cost of the drug. Although potent analgesics are administered to treat acute pain, management of chronic pain such as in a spinal injury or a phantom limb pain requires long term pharmacological and non-pharmacological intervention. Chronic pain is an expensive economic and health burden in industrialized and developing countries. It can either be cancer or non-cancer related with the latter accounting for the vast majority of patients. Lower back pain and that with spinal origin are the most prevalent and documented examples of non-cancer chronic pain.

The clinical intervention of pain includes administration of pharmacological agents such as non steroidal anti-inflammatory drugs (NSAID's), glucocorticoids, opioids, and local anesthetics, which can be administered standalone or as synergistic drug combinations. These drugs can be administered by oral, topical, transdermal, systemic, epidural, or intrathecal routes.

The World Health Organization's (WHO) Pain Relief Ladder recommends that the potency of a certain analgesic used should be in tandem with the severity of the pain. Hence, basic pain medicines such as acetaminophen, aspirin, or ibuprofen should be used for mild to moderate pain while morphine and other opioids and their analogues are usually recommended for treating severe pain. For chronic pain management, WHO recommends oral morphine given at regular intervals. Oral delivery is especially beneficial for children and patients whose muscle tissue is emaciated by cancer or HIV/AIDS. However, drug dependency and drug tolerance associated with opioids are major drawbacks.

The transdermal formulations present an alternate pain management approach to the conventional oral or injectable delivery methods. Since the transdermal absorption rate is generally constant at a constant skin temperature, the dosage is controlled by the size of the patch. Transdermal patches of buprenorphine and Fentanyl are available in most European countries as well as in the United States for opioid tolerant patients (patients who have been on opioids for one week or more). Buprenorphine, a semi-synthetic opioid, is commonly used for treating opioid addiction in higher doses by sublingual route. Its transdermal patch is used for managing moderate chronic pain in dosages ranging from 20–70 μg/hour approximately. Fentanyl is a strong agonist at the μ-opioid receptors. It is 100 times more potent than morphine, has a more rapid onset of action and has been commonly used for treatment of breakthrough pain (sudden burst of pain for short periods). Fentanyl patches are presently manufactured in five micrograms/hour patch sizes: 12.5 μg/h, 25 μg/h, 50 μg/h, 75 μg/h, and 100 μg/h.

Intranasal fentanyl spray (INFS) has been developed that results in absorption of fentanyl into the systemic circulation via the nasal mucosa for the management of breakthrough cancer pain. At doses of 50, 100, and 200 μg INFS is effective and is well tolerated in patients with cancer. These results support INFS use in patients with cancer suffering from breakthrough pain.

Spinal drug delivery systems or intrathecal drug delivery systems have been developed for administration of spinal-acting analgesics or antispasmodics when the oral or transdermal routes have failed to control patients' pain or are associated with unacceptable side effects. Intrathecal pumps are surgically placed under the skin of the abdomen and deliver medication through a catheter to the cerebrospinal fluid. Pain relief by such 'pain pumps' is more effective with fewer side effects as compared to oral medications because less medicine is required to control pain.

Although current drug therapies have provided considerable improvements in management of both acute and chronic pain, the availability of newer drug delivery methods for pain management has been hampered by high rate of failures in clinical trials. However, every failure is a stepping stone to success and the global scientific community is working on innovatory drug delivery methods that will further improve efficacy, lower side effects and are more targeted in their approach.

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