



EMERGENCY DEPARTMENT PAIN MANAGEMENT: WHERE ARE WE HEADING

Anesthesiology

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KEYWORDS

Pain is the most common complaint bringing patients to the emergency department (ED), with a prevalence ranging from 45% to 75%.¹ Despite being such common complaint, under diagnosis and under treatment are not very uncommon, and oligoanalgesia is very rampant in EDs.² However, at many centers liberal use of opioids in acute pain and chronic cancer pain has led to abuse, increased morbidity and mortality.³ Although Joint Commission on Accreditation of Healthcare Organizations has revised pain management standards, these regulatory changes are yet to affect ED pain management practice. Nowadays after understanding the neurobiological aspect of pain, its specific mechanism and neurophysiology we tend to use precise type and amount of analgesic or an intervention closest to the pain generating focus, which allows cutting down on opioid consumption with overall better pain scores in ED.

ACUTE PAIN

Prompt recognition and assessment of a sudden onset painful condition presenting in ED leads to timely initiation of appropriate and effective analgesia, and further reassessment and exploration and treatment of cause can be used to adjust therapy.

DRUGS:

Opioids

Traditional and most accepted drug for acute pain management in the ED, most commonly pure μ -receptor agonists, such as morphine, hydromorphone, or hydrocodone. Since the interindividual dose-response relationships is highly variable, fixed dosing regimens do not work well for pure μ -opioid agonists, and dosages should be titrated with every case until satisfactory pain relief is achieved or adverse effects become unacceptable.^{4,5} Accepted route of delivery are intravenous bolus or infusion; nebulized or intranasal, transdermal patches when no intravenous access is available with a drawback of the variable dose-response relation, which may lead to oligoanesthesia or overdose. Patient-controlled analgesia (PCA) is a novel approach with better patient satisfaction as morphine, hydromorphone, or fentanyl are administered with precise titration done by EP and patients both on basis of pain.

Nonsteroidal Anti-inflammatory Drugs (NSAIDs):

NSAIDs have been extensively used in ED for the management of a variety of acute and chronic painful conditions like colics, headache, dental pain and musculoskeletal (MSK) pain. Various randomized controlled trials have documented intravenous (IV) paracetamol equivalent to IV morphine in terms of analgesic efficacy in colics and MSK pains with significantly less side effects although advantage of IV paracetamol over oral formulations in terms of cost and benefit ratio still remains a controversy.⁶

Ketamine

Ketamine is potent analgesic, antihyperalgesic and amnestic substance when given at analgesic dose (0.1 to 0.4 mg/kg), associated with high rates of minor adverse effects (14%–80%) which are characteristically short-lived and do not require any intervention. Pain relief comparable with IV morphine (0.1 mg/kg) is highest at 5 to 15 minutes which usually last for 30 minutes and effective analgesia with significantly less side effects (6%) can be achieved using short infusions of low-dose ketamine (0.3 mg/kg over 10 minutes).^{7,8} Also, it can be given intranasally at dose of 1 mg/kg in children and adults with acute traumatic limb injury with similar analgesic efficacy compared to intranasal fentanyl (1.5 mcg/kg) at 30 minutes but with higher rates of minor side effects.⁹

Local Anesthetics

The use of local anesthetics in ED depends on clinical situation, location, intensity and duration of analgesia required, and accordingly they can be used in the ED for topical, local, regional nerve blocks, intra-articular, systemic anesthesia and analgesia. Topical formulations like patches, ointments, gels and creams contain lidocaine and/or prilocaine have been used for analgesia in acute sprains, strains, and contusions along with acute inflammatory and chronic neuropathic conditions, like acute herpes zoster infection, postherpetic neuralgia, complex regional pain syndromes and painful diabetic neuropathy.¹⁰ Local anesthetic when used for ultrasound-guided regional anesthesia provides site specific pain relief, with reduction in opioid requirements and better patient satisfaction. Studies evaluating various blocks eg, interscalene, supraclavicular, forearm blocks, femoral nerve, fascia iliaca compartment block for patients with fractures, dislocations and abscess have shown complete pain relief, proper muscle relaxation, fewer complications, minimal need for opioid analgesia and excellent patient satisfaction.^{11–14} Intra-articular lidocaine injection for patients with acute shoulder dislocations in the ED is associated with better periprocedural pain relief and reduction success along with decreased cost of treatment and complications rate.¹⁵ More recently IV lidocaine is being evaluated in patients with renal colic and acute lower back pain and preservative free formulation given at dose of 1.5 mg/kg has provided promising relief in 87%–90% of renal colic pain with a few transient side effects.¹⁶ On the other side IV lidocaine when given in patients with acute lower back pain is associated with a short lived pain relief in 65% of patients.¹⁷ So, the utility of IV lidocaine although seems fairly reassuring, further larger populations studies are needed along with evaluation of safety in patients with underlying cardiac disease.

Entonox

Entonox that is composed of nitrous oxide and oxygen in equal proportions (50:50), has been used along with hematoma block in forearm fractures and was more effective than ketamine/midazolam combination in terms of analgesia, recovery time and adverse effects.¹⁸ Entonox has demonstrated equivalent analgesia without any difference in adverse effects when compared to IV fentanyl (2 mg/kg) in patients with long bone fracture.¹⁹

Targeted Analgesia

Based on our improved understanding of pain physiology, mechanisms, receptors, agonists and antagonists we need to change our approach from symptom-based to pathophysiology based approach. When we administer two drugs of different mechanism of action on similar pain, such combinations provide superior analgesia, fewer side effects, lesser sedation, and higher satisfaction.

CHRONIC PAIN

Chronic noncancer pain carries a significant societal burden which used to remained undertreated, but with liberal opioids policies, prescription increased by 866% overall and the rates of addiction treatment from prescription opioid abuse increased by 900% and 24% patients with chronic pain mostly misuse opioids.²⁰ Chronic pain requires a very comprehensive approach for evaluation and management including identification and treatment of precipitating factors, psychological treatment, nonopioid and adjuvant analgesics, management of associated behavioral disorders, and rehabilitation. Once all these measures are initiated then only opioid therapy should be tried. ED has a fast-paced environment, EPs face lack of time to interact with patients with chronic pain, access and verify past records and patient physician agreement, assess risk for abuse and misuses of opioids. EPs can use a standard prescription drug monitoring programs

(PDMPs) as in United States to avoid excessive dosing and drug interactions and by identifying aberrant use behaviors, or doctor shopping. To provide safe and satisfactory chronic pain management in the ED, EPs should educate patient on the effectiveness and safety of analgesics like NSAIDs, opioids, nonopioid analgesics, involve them in decision making for opioids use after evaluating risk of opioid abuse and misuse. EP must promote safe and satisfactory patient-centered analgesia by informed prescribing practice, along with a watch on public health risks of opioid analgesics. American Academy of Emergency Medicine has laid down certain recommendations to be considered while prescribing an opioid medication in treatment of chronic noncancer pain in the ED²¹:

1. In patients with a clear indication for the use of opioid medication that is severe acute traumatic or nontraumatic pain begin with lowest effective dose of an short acting opioid analgesic for a short course (up to 3 days); in other exacerbations of chronic pain consider non-opioid analgesics, non-pharmacological modalities, or selective pain procedures done by pain specialists.
2. Use a validated screening tool to assess opioid misuse or addiction and check centralized prescription network for patient information.
3. Avoid initiating treatment with long-acting opioid such as methadone, avoid prescribing opioids to patients currently taking sedative-hypnotics or concurrent opioids and also avoid replacing prescriptions for lost, stolen, or destroyed opioid analgesic.
4. Always provide information to patients about opioid analgesics regarding the risks of overdose, dependence, addiction, safe storage, and proper disposal of unused medications.
5. Honor existing patient-physician pain contracts, past prescription patterns and treatment agreements and try to involve patients in their analgesic decision making towards nonopioid analgesics.

SUMMARY

The ED is the first step for medical attention for patients with traumatic and nontraumatic, acute or exacerbation of chronic painful conditions, so, EPs are expected to relieve pain by the most appropriate modality in a timely, cost efficient, and adverse effect free, safe manner. The advances in neurophysiology and mechanism of pain has led to a major shift in preference towards nonopioid analgesia in the ED along with more precise and safer opioid use. Our orientation should be towards a targeted analgesia perfectly tailored for individual patient needs obtained by education, research and exploration of more efficient, unambiguous and safer analgesics practices in the ED.

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