Acute Pain Management in the Opioid Tolerant Patient

Jean-Louis Horn, MD
Professor, Chief, Division of Regional Anesthesia
Department of Anesthesiology, Perioperative and Pain Medicine
Disclosure

• Consultant for Teleflex Medical
• Consultant for Halyard Health
• Consultant for Edan Medical
• Research support from Zyno Medical

"Under disclosure rules, I'm required to tell you I own stock in the company whose drug I'm prescribing."
Overview

- Definition and Scope
- Management modalities
- Conclusions
Post-Operative Pain

- Pain response to nociceptive stimulus is subjective and highly variable
  - Influenced by psycho-social factors (anxiety, gender, cultural...)
  - Genetic factors
  - Previous pain experience/current pain level
  - Previous exposure to opioids
Opioid Epidemic


- Opioid analgesic
- Heroin*

*Heroin includes opium.
Opioid Tolerance

A phenomenon where the pain relieving effects of the medication decrease over time, so the patient feels they need more of the drug to achieve the same effect.
FDA Definition of Opioid tolerance

More than 60 mg of oral morphine equivalence (MEQ) for at least 7 days

Mechanism

Presynaptic EAA release by opioids
Postsynaptic NMDA activation
Down regulation and desensitization of receptors

Pain Management Nursing. 2007:8(3):113-21
Opioid Induced Tolerance

- Can develop after a short/acute exposure, not just after long term usage
- High potency opioid may be more “potent” to induce tolerance
- But no tolerance to miosis and constipation!!!
- Chronic opioid users require 3-4x dosage of opioid to control their pain postoperatively

Pain 1995;61:195-201
Anesth Analg 1993;76:302-7
Opioid Induced Hyperalgesia

- State of nociceptive sensitization caused by exposure to opioids
- Paradoxical response to opioids where exposure to treat pain increase sensitivity to certain painful stimuli
- Result in loss of efficacy of opioids

Overview

- Definition and Scope
- *Management modalities*
- Conclusions
Basic Principles

- Identify the specific problem
  - Pain and related affect (psycho-social situation)
  - Current opioid usage and dosage
  - Current adjunct therapy

- Plan
  - Manage/stabilize psycho social issues
  - Maximize systemic non-opioid adjuvants
  - Plan for Regional and Local anesthesia
  - Manage and plan perioperative opioid therapy
Psycho-Social issues

- Preoperative counseling and setting up reasonable expectations ~ placebo effect
- Refer to pain clinic to ensure multidisciplinary care when the situation is out of control
- Not a time to treat dependence
- Opioid-phobia should not lead to poor planning
- Keep the baseline opioid and supplement as needed
- Postop dosage is difficult to predict
Adjuvant Therapy

- NSAIDS
- COX-2 inhibitors
- Acetaminophen
- Neuropathic pain medication
- Vit C
- Mg++
- Ketamine
- Regional/Local anesthesia
- “Methadone”
- “Neuromodulation”
Ketamine

- Prevent/reverse central sensitization to opioids
- Small dose (0.25mg/kg) added to morphine (0.1mg/kg)
  postop decrease VAS from 6/10 to 1.47/10 compare to
  3.8/10 with morphine alone while maintaining better
  oxygenation, less N/V
- Intraoperative use in opioid tolerant patients, the effect
  was still present 6 weeks after surgery (pain, opioids and
  side effects)
- Seems more efficacious when given before opioids
  Anesth Analg 2003 (93) 789-95
  Anesthesiology 2010 (113) 639-46
Ketamine Side Effects and Myths

- Tachycardia and hypertension
  - Easy to avoid with low dose and slow titration
- Hallucinations
  - Minimize the impact with proper education
  - Mostly enjoyed by our patients ~ trip
- Cognitive dysfunction in the elderly
  - Unfounded and in fact the opposite most likely due to the opioid sparing effect
- Delay emergence from anesthesia
  - Unfounded and in fact may be the opposite
Local and Regional Anesthesia

- Spinal for intraop anesthesia
- LIA
- Peripheral Nerve Block (catheter based):
  - AC vs Fem (+ sciatic) for TKA
  - LPB for THA
- “Epidural”
- Opioid tolerance induced local anesthetics tolerance
Opioid-induced Loss of Local Anesthetic Potency in the Rat Sciatic Nerve

Qing Liu, M.D., Ph.D., Michael S. Gold, Ph.D.
Opioid Management

- Keep the baseline opioid (not a good time for weaning opioids)
- Supplement as needed, keeping in mind that the patient may require higher dosage
- And is at increase risk of serious complication related to opioids including overdosing
WHO Pain Management Ladder

WHO Cancer Pain Management Ladder

- Valid for **non**-opioid tolerant patient

- **Highlight the value of the non-opioids adjuvants**
Methadone

- Long acting opioid with NMDA antagonist properties
- Prevent opioid induced hyperalgesia
- Relatively low rate of respiratory depression
- With ketamine, presents super additive NMDA antagonist action

J Pharmacol Exp Ther 1999. 289(2): 1048-53
Conclusions

- **CHALLENGE**
- 9 FOLD increase of overdose
- Preop planing
  - Maintain current opioid baseline dose
  - Patient support/education
  - NSAIDS
  - COX-2 inhibitors
  - Acetaminophen
  - Vit C
  - Anti-epileptic (Gabapentin....)
- Intra-op
  - Ketamine
  - Regional/Local anesthesia
  - Alpha-2-agonists
- Postop
  - Continue multimodal pain management, (ketamine) + added opioids
- Future
  - Neuromodulation
  - Methadone
Thank you