

Episode 108: Non-opioid adjuncts with Drs. Grant and Bicket Part 1

On this episode: Dr. Jed Wolpaw, Dr. Mike Grant and Dr. Mark Bicket

In this 108th episode I welcome Dr. Mike Grant and Dr. Mark Bicket to the show to discuss various non-opioid adjuncts such as esmolol, ketamine, dexmedetomidine, lidocaine, and magnesium, and the role they may play in multimodal anesthesia. In this episode, part 1, we discuss pre and post-op use. Intraop use will be discussed in [episode 109](#).

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Why are we interested in non-opioids?

- In midst of opioid crisis. If used less perioperatively, we can lessen burden
 - o See [Episode 61: The Opioid Crisis with Shravani Durbhakula](#)
- In 2017, 70,000 deaths from overdose with > 2/3 from opioids
- Reduce side effects

Why use adjuncts in preoperative period?

- Why not wait until pain?
 - o If we can layer on some pain reduction before pain impulse, we can reduce intraoperative opioid use and have longer effects postoperatively
- Unclear understanding of mechanism but described as 'preemptive' or 'preventative'
- Pain pathways: input from periphery to dorsal horn then become sensitized
- Is this related to wind-up?
 - o Central sensitization, similar to hyperalgesia, allodynia, where constant low-grade noxious stimulus amplifies effect with subsequent increase of stimulation
- Opioid-induced hyperalgesia related to concentration and duration of time

Gabapentin

- Evidence in large abdominal incision surgery and some orthopedic procedures shows benefit in opioid sparing quality and postop pain scores
- Risk factors to reduce dosage: old age (~70 years), low GFR (~60)
- Bolus of 600mg PO → half dose or not at all
- Contributes to "gabapentin coma"? Likely given no reversal, and time-dependent clearance
- Unclear mechanism

NSAIDs

- One of 2 easiest way to spare opioids
- Inhibits cyclooxygenase and prostaglandins
- Celecoxib: COX-2 selective, carry theoretical measure of comfort re: bleeding
 - o Not many studies re: selective COX in periop setting so either appropriate
 - o Dose: 200mg starting dose
 - o Risk factor: preexisting Renal impairment (GFR ~60 reasonable)
- Scheduled NSAID use leading to bleeding – unfounded?

Acetaminophen

- Anecdotally, true fever tends to break through *acetaminophen*. Don't withhold in fear of masking signs and symptoms
- Best studied model of surgical pain comes from dental extraction (3rd molar) – Cochrane reviews show combination NSAID/acetaminophen has lower NNT than opioid combination ([View summary](#))
- PO vs IV not much different
- Contraindications: liver dysfunction
 - o Anecdotally have used up to 3g/24hr in liver impaired pts
 - o Not absolute contraindication, depends on whole picture
- Unclear central acting mechanism

Duloxetine

- Data in last few years with early evidence to suggest this works
 - Single agent (not in bundle) via unclear mechanism
 - ↓ sense of catastrophization or behavioral component to worsening pain, but require further
-

investigation

- Serotonin-Norepinephrine Reuptake Inhibitor

Postoperative period

- Lots can be continued postop, taking in to consideration patient characteristics, eg liver/age
- Gabapentin: Efficacy show continue postop
- Scheduled NSAID
- Educate patients on 3g/24hr ceiling for acetaminophen
- Dextromethorphan?
 - o NMDA receptor, similar to ketamine

What do you do with non-opioid adjuncts?

References

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IV Lidocaine: <https://academic.oup.com/bjaed/article/16/9/292/1743710>

Ketamine: <https://www.ncbi.nlm.nih.gov/pubmed/29870457>

Dextramethorphan: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4755866/>

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Notes by [Brian Park](#)