Impact of Gabapentin & Dexamethasone on Incidence of PONV in Knee & Hip Arthroplasty Patients with Neuromaxial Anesthesia

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Background
- PONV continues to be a common and distressing complication.
  - 50% of patients experience nausea.
  - 30% experience vomiting.
- Incidence for patients at high risk ~ 80%.
- Primary risk factors include:
  - Female gender
  - History of PONV or motion sickness
  - History of PONV or motion sickness
  - Preoperative nausea
- Neuromaxial anesthesia is a well-established deterrent to PONV.

Practice Background
- Knee and hip arthroplasty patients at the study institution are preferentially anesthetized by subarachnoid block with propofol infusions.
- A multimodal anesthetic protocol was added to reduce opioid consumption.
  - Protocol included preoperative acetaminophen, gabapentin, celecoxib, & dexamethasone.
  - Dexamethasone is well-established to have antiemetic properties.
  - Recent evidence suggests that gabapentin may also reduce PONV.
- Examine the incidence of PONV in this population receiving neuraxial anesthesia and propofol in 2017.

Study Variables
- Main outcomes of interest:
  - PONV risk factor profile.
  - PONV incidence.
  - Impact of adding gabapentin, separately or in combination with other anesthetics on PONV incidence.
- Other data points:
  - Age
  - Gender
  - History of PONV or motion sickness
  - History of PONV or motion sickness
  - Age

Methodology
- A retrospective, exploratory study.
- Practice-based research methodologies were used.
- Data electronically abstracted from purpose-confirmed sample of medical records of all adults undergoing knee or hip arthroplasty with neuraxial anesthesia and propofol in 2017.
  - Preoperative PONV risk assessment in chart.
  - Patients receiving haloperidol, diphenhydramine, or scopolamine were excluded.

Results
- Description of Study Population
  - Median age 68 (62-74).
  - Median surgery duration 71 min (58-90).
  - Median anesthesia duration 134 min (117-157).
- Demographics: N=1,025
  - Male 46%.
  - Female 54%.
  - Median ASA score 2 (1-3).
  - Median surgery duration 71 min (58-90).
  - Median anesthesia duration 134 min (117-157).
- PONV Risk Score
  - 50% of patients experience nausea.
  - PONV continues to be a common and distressing complication.

Conclusions
- Gabapentin/dexamethasone combination was most effective in reducing PONV.
  - 78% reduction (OR 0.21, 95% CI: 0.14-0.30).
- Ondansetron/propofol combination, with or without gabapentin or dexamethasone,
showed little benefit in preventing PONV in this population.

Implications
- Findings clearly support the effectiveness of a multimodal, opioid-sparing anesthetic protocol (gabapentin, dexamethasone, & propofol) in reducing PONV incidence in this population.
- Further exploration of the efficacy of ondansetron as a PONV risk reduction agent in this population is indicated.