Non-narcotic Emergency Management of Renal Colic Improves Length of Stay and Discharge Rate

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Introduction
NSAIDs in general, and ketorolac in particular, have been recognized to be more effective in acute management of renal colic than narcotics for more than 25 years. However, narcotics remain a mainstay of ED symptom control. Examination of the precipitants of the current opioid crisis, reveals that many can trace dependency to initial iatrogenic opioid exposure. Stone patients are at particular risk because of the recurrent severely symptomatic episodes and procedures.

We report ED care patterns in a large metropolitan US health system. Patients were identified by ED billing code query between 6/2014 – 12/2016.

Patient Flow

Ketorolac monotherapy was associated with superior length of stay and discharge rates. Offering ketorolac to more patients could improve outcomes and reduce opioid exposure.

Patient Characteristics

- Male (%): 217 (56%) vs. 297 (56%) vs. 267 (63%) (P=0.064)
- Age (y) (mean±SD): 45.5±14.1 vs. 51.4±16.7 vs. 46.7±13.8 (P<0.001)
- Distal location: 242 (63%) vs. 351 (66%) vs. 273 (64%) (P=0.659)
- Average stone size (mm): 4.1±2.0 vs. 4.1±1.9 vs. 3.9±1.8 (P=0.124)
- Average initial pain score: 8.3±1.3 vs. 8.6±1.3 vs. 8.9±1.2 (P<0.001)

Care Parameters

- Time to first medication (hrs) (mean±SD): 1.1±0.8 vs. 1.2±0.9 vs. 0.9±0.7 (P<0.001)
- First medication prior to CT: 352 (92%) vs. 478 (90%) vs. 412 (97%) (P<0.001)
- CT ordered within 1 hour: 273 (71%) vs. 327 (62%) vs. 309 (78%) (P<0.001)
- Ondansetron administered: 228 (59%) vs. 394 (74%) vs. 318 (75%) (P<0.001)
- Any rescue medication: 138 (36%) vs. 369 (69%) vs. 197 (46%) (P<0.001)
- Any rescue narcotic: 138 (36%) vs. 278 (62%) vs. 197 (46%) (P<0.001)
- Any narcotic: 138 (36%) vs. 530 (100%) vs. 423 (100%) (P<0.001)

Likelihood of Receiving “Rescue” Analgesia

- Initial Medical Management
  - Ketorolac Only
  - Narcotic Only
  - Ketorolac & Narcotic
- Male (%)
  - Ketorolac Only: 217 (56%)
  - Narcotic Only: 297 (56%)
  - Ketorolac & Narcotic: 267 (63%)
- Age (y) (mean±SD)
  - Ketorolac Only: 45.5±14.1
  - Narcotic Only: 51.4±16.7
  - Ketorolac & Narcotic: 46.7±13.8
- Distal location
  - Ketorolac Only: 242 (63%)
  - Narcotic Only: 351 (66%)
  - Ketorolac & Narcotic: 273 (64%)
- Average stone size (mm)
  - Ketorolac Only: 4.1±2.0
  - Narcotic Only: 4.1±1.9
  - Ketorolac & Narcotic: 3.9±1.8
- Average initial pain score
  - Ketorolac Only: 8.3±1.3
  - Narcotic Only: 8.6±1.3
  - Ketorolac & Narcotic: 8.9±1.2

Likelihood of Admission to Hospital

- Initial Medical Management
  - Ketorolac Only
  - Narcotic Only
  - Ketorolac & Narcotic
- Male (%)
  - Ketorolac Only: 217 (56%)
  - Narcotic Only: 297 (56%)
  - Ketorolac & Narcotic: 267 (63%)
- Age (y) (mean±SD)
  - Ketorolac Only: 45.5±14.1
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- Average initial pain score
  - Ketorolac Only: 8.3±1.3
  - Narcotic Only: 8.6±1.3
  - Ketorolac & Narcotic: 8.9±1.2

Conclusions

1. Ketorolac monotherapy was associated with superior length of stay and discharge rates.
2. Offering ketorolac to more patients could improve outcomes and reduce opioid exposure.

Care Parameters

- Initial Medical Management
  - Ketorolac Only
  - Narcotic Only
  - Ketorolac & Narcotic
- Time to first medication (hrs) (mean±SD): 1.1±0.8 vs. 1.2±0.9 vs. 0.9±0.7 (P<0.001)
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- Any rescue narcotic: 138 (36%) vs. 278 (62%) vs. 197 (46%) (P<0.001)
- Any narcotic: 138 (36%) vs. 530 (100%) vs. 423 (100%) (P<0.001)

Likelihood of ED length of Stay >3 hours

- Initial Medical Management
  - Ketorolac Only
  - Narcotic Only
  - Ketorolac & Narcotic
- ED length of stay >3 hours: 352 (92%) vs. 478 (90%) vs. 412 (97%) (P<0.001)
- ED length of stay <3 hours: 154 (40%) vs. 104 (19%) vs. 181 (42%) (P<0.001)
- ED discharge: 367 (96%) vs. 442 (83%) vs. 391 (92%) (P<0.001)