Clinical Practice Statement:

Should Antiemetics be given Prophylactically with Intravenous Opioids while Treating Acute Pain in the Emergency Department? (6/1/10)

Executive Summary

The routine administration of antiemetics with intravenous opioids while treating acute pain in the ED is not indicated.

Summary of the important findings of the literature review

Talbot et al. evaluated the incidence of nausea and vomiting after morphine and pethidine (meperidine) analgesia in a prospective, randomized, double-blind, placebo-controlled trial. Out of 122 patients seven patients (5.7%) experienced nausea and one patient (0.8%) had vomiting; metoclopromide administration increased adverse effects without changing the rate of nausea / vomiting.[2]

Paoloni et al designed a prospective observational study in 205 ED patients in an effort to evaluate the rate of vomiting before and after administration an intravenous opiate analgesia at 30 and 60 minutes. The results showed a cumulative incidence of vomiting of 1.5 % at 30 minutes and 2.4 % at 60 minutes.[3]

Bradshaw and colleagues conducted a randomized controlled trial comparing the incidence of nausea and vomiting in 259 patients with acute pain treated with morphine along with prophylactic metoclopramide or placebo. The results showed the overall incidence of nausea and vomiting in the whole study population was 2.7%: 1.6% in the metoclopramide group and 3.7% in the placebo group without statistical significance.[4]

Yeoh and colleagues evaluated the value of an educational initiative designed to reduce the prophylactic use of metoclopramide with initial morphine dose by conducting a pre-and post-intervention trial. The results showed a significant reduction of the proportion of patients receiving metoclopramide from 22.6% to 4.1% ($P<0.001$). [5]

References

1. Porrecca F, Ossipov MH. Nausea and Vomiting Side Effects with Opioid Analgesics during Treatment of Chronic Pain: Mechanism, Implications, and Management Options. Pain Medicine. 2009; Vol 10(4): 654-662.

2. Talbot-Stern J, Paoloni R. Prophylactic metoclopramide is unnecessary with intravenous analgesia in the ED. Am J Emerg Med. 2000 Oct;18(6):653-7.

3. Paoloni R, Talbot-Stern J. Low incidence of nausea and vomiting with intravenous opiate analgesia in the ED. Am J Emerg Med. 2002 Nov;20(7):604-8.

4. Bradshaw M, Sen A. Use of a prophylactic antiemetic with morphine in acute pain: randomised controlled trial. Emerg Med J. 2006 Mar; 23(3):210-3.

5. Yeoh BS, Taylor DM, Taylor SE. Education initiative improves the evidence-based use of metoclopramide following morphine administration in the emergency department. Emerg Med Australas. 2009 Jun; 21(3):178-83.

Appendix: Literature Search Strategy

Using the AAEM methodology for literature search the following search was performed. Search terms (antiemetics, opioids , metoclopromide, ondansetron, phenergan and prochlorperazine ,acute pain, morphine, hydromorphone) limited to 2000-2009, English language. The clinical question: "**Should antiemetics be given prophylactically with intravenous opioids while treating acute pain in the Emergency Department**? Studies targeting differences between specific populations (males versus females) were excluded.

Tier 1

Systematic reviews- Provided 1 Citation.

Tier 2

High quality clinical trials and multicenter studies in core clinical journals – Provided 3 citations, for which the titles and abstracts were scanned to assess relevance to study questions, yielding 3 relevant citations and 3 randomized controlled trials. The queries with respect to ondansetron use with opioids revealed 8 articles with none of them addressing acute pain in the ED.

Tier 1

Emerg Med J. 2004 May;21(3):334-5

Best evidence topic reports. Metoclopramide versus placebo with opioid

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A short review was carried out to establish whether metoclopramide reduced nausea and vomiting after the administration of morphine. Altogether 405 papers were found using the reported search, of which one presented the best evidence to answer the clinical question. Intravenous morphine or pethidine analgesia was administered with metoclopramide or placebo to 122 opiate-naïve patients with acute severe pain in this this prospective, randomized, double-blind, placebo-controlled trial. 63 patients received metoclopramide, rest of the patients received placebo. The primary outcomes were nausea and vomiting at 30 min and 60 min after morphine administration. Results: at 30 minutes- nausea developed in 3.2% in metoclopromide group vs. 6.8% in placebo group; at 60 min-4.8 % in metoclopromide group vs. 3.4 % in placebo. Vomiting developed at 30 min -0% in metoclopromide group vs. 0% in placebo group; at 60 min- 0% in metoclopromide group vs 1.7% placebo. Side Effect: Metoclopormide 7.9% vs.3.4 % in placebo. None of these differences reached statistical significance. Conclusion: The low incidence of nausea and vomiting after opiate analgesia, and higher incidence of side effects with metoclopramide do not warrant prophylactic and routine metoclopramide administration in ED for patients receiving parenteral morphine or pethidine analgesia.

Evidence: Not supporting. Grade A. Quality: Adequate

Comments: Small study and very small incidence of nausea and vomiting in both groups.

PMID: 15107376 [PubMed - indexed for MEDLINE

Tier 2

1. Am J Emerg Med. 2002 Nov;20(7):604-8

Prophylactic metoclopramide is unnecessary with intravenous analgesia in the ED

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This prospective, randomized, double-blind, placebo-controlled trial assessed the incidence of nausea and vomiting after morphine and pethidine (meperidine) analgesia, and the effect of metoclopramide on this incidence. Intravenous morphine or pethidine analgesia was administered with metoclopramide or placebo to 122 opiate-naïve patients with acute severe pain. Seven patients (5.7%) experienced nausea, three in the metoclopramide group and four in the placebo group. One patient (0.8%) had vomiting. The frequency of other side effects was higher in the metoclopramide group (7.9% versus 3.4%). None of these differences reached statistical significance. The low incidence of nausea and vomiting after opiate analgesia, and higher incidence of side effects with metoclopramide, are consistent with controlled data in the literature. Prophylactic metoclopramide should not be used routinely in ED patients receiving parenteral morphine or pethidine analgesia.

AAEM Review Evidence: Not supporting. Grade A. Quality Adequate

2. Emerg Med J. 2006 Mar;23(3):210-3.

Use of a prophylactic antiemetic with morphine in acute pain: randomized controlled trial.

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OBJECTIVE: The aim of this study was to compare the incidence of nausea and vomiting in patients with acute pain treated with morphine along with prophylactic metoclopramide or placebo. METHOD: A administering controlled trial was carried out on patients requiring morphine for acute pain in the emergency department (ED) setting. Children under the age of 12, patients who had been vomiting or had already received prehospital analgesia, and those unable to give consent were excluded. All patients were given either metoclopramide (10 mg) or placebo (normal saline) followed by intravenous morphine. Pain scores (measured on a visual analogue scale) before and after morphine administration, all incidents of nausea or vomiting, the dose of morphine, and the patients' demographic data were recorded. Fisher's exact test was used for comparing the two groups of patients. RESULTS: A total of 259 patients were recruited. There were 123 patients in the metoclopramide group (age range 15-94 years; median

age 53) and 136 patients in the placebo group (age range 17-93 years; median age 52.5). The overall incidence of nausea and vomiting in the whole study population was 2.7%, (1.6% in the metoclopramide group and 3.7% in the placebo group). The difference between the two groups was not statistically significant (Fisher's exact test = 0.451; p = 0.3; z-test statistic = 1.02; 95% CI -6% to 2%). CONCLUSION: When intravenous morphine is administered for acute pain, the overall incidence of nausea and vomiting is low, regardless of whether these patients are given prophylactic metoclopramide or not.

AAEM Review Conclusion: Not supportive. Grade A. Quality: Good

PMID: 16498159 [PubMed - indexed for MEDLINE]

3. Am J Emerg Med. 2002 Nov;20(7):604-8.

Low incidence of nausea and vomiting with intravenous opiate analgesia in the ED

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Two double-blind, placebo-controlled, prospective randomized trials in the emergency department (ED) setting have examined the use of metoclopramide for the prevention of opiate-induced nausea and vomiting. Both showed a low incidence of vomiting in the control group. This prospective observational study in 205 unselected ED patients with acute pain syndromes measured nausea and vomiting before intravenous opiate administration and 30 and 60 minutes posttreatment. Cumulative incidence of vomiting was 1.5% at 30 minutes and 2.4% at 60 minutes. Corresponding figures for nausea were 4.9% at 30 minutes and 9.3% at 60 minutes, with more than 75% of patients rating their nausea as mild. Prevalence of both nausea and vomiting were higher at baseline than after analgesia. Conclusion: the incidence of nausea and vomiting after intravenous opiate analgesia in the ED is low and argues against routine use of prophylactic antiemetic administration in combination with opiate analgesia.

AAEM Review Conclusion: Not supportive. Grade A. Quality: Good

PMID: 12442238 [PubMed - indexed for MEDLINE]

Tier 4

Emerg Med Australas. 2009 Jun;21(3):178-83.

Education initiative improves the evidence-based use of metoclopramide following morphine administration in the emergency department

Yeoh BS, Taylor DM, Taylor SE.

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OBJECTIVE: We aimed to evaluate a multifaceted education initiative designed to reduce the prophylactic use of metoclopramide. METHODS: This was a pre- and post-intervention trial undertaken in a single ED. All ED doctors and nurses were targeted. The intervention comprised a specifically designed, 19-slide 'e-learning module', accessible via the ED intranet, supplemented by in-service training and a range of reminder techniques (posters, emails and drug room flyers). The primary end-point was the proportion of patients administered metoclopramide prophylactically with their initial morphine dose. Data were collected on random samples of patients who received morphine, using explicit medical chart review. RESULTS: Both pre- and post-intervention periods were of 3 month duration. The charts of 146 cases were reviewed in each period. In the post-intervention period: * The proportion of patients administered metoclopramide prophylactically decreased from 22.6% to 4.1% (difference 18.5% [95% CI 10.3-26.7], P < 0.001) * The proportion of patients administered metoclopramide appropriately (for known morphine sensitivity, established nausea and rescue anti-emesis) rose marginally from 28.8% to 32.9% (difference 4.1% [95% CI -7.2-15.4], P = 0.53) * There was a 12.7% decrease in the number of ampoules of metoclopramide issued to the ED without a concurrent rise in the issue of other anti-emetic drugs CONCLUSION: The education initiative resulted in a significant improvement in the evidence-based use of metoclopramide.

Conclusion: Not supportive. Grade C. Quality: Adequate

PMID: 19527276 [PubMed - indexed for MEDLINE