

Prochlorperazine versus Promethazine for Uncomplicated Nausea

Ernst AA, Weiss SJ, Park S, Takakuwa KM, Diercks DB. Prochlorperazine versus promethazine for uncomplicated nausea and vomiting in the emergency department: a randomized, double-blind clinical trial. *Ann Emerg Med* 2000;36:89-94.

Study Overview

Objective. To determine if prochlorperazine and promethazine, 2 commonly used antiemetic drugs, are equally effective in treating uncomplicated nausea and vomiting from gastroenteritis.

Design. Randomized, double-blind trial.

Setting and participants. 90 consecutive patients presenting to 2 U.S. university hospital emergency departments with uncomplicated nausea and vomiting were recruited over a 2-year period. Uncomplicated nausea and vomiting was defined as acute symptoms without localized abdominal pain or a known etiology other than gastritis or gastroenteritis. Other inclusion criteria included age 18 years or older, inability to drink fluids without exacerbating symptoms, and need for intravenous hydration and antiemetic medication. Patients were excluded if they had serious underlying illness (eg, diabetes, renal failure), altered sensorium, received prior antiemetic medication, inability to understand written English, drug or alcohol use, pregnancy, or inability to perform visual analog scale (VAS) ratings. Six declined participation, and 84 were randomized. 70% of the patients were women, mostly white or African American, with an average age of 30 years. They had vomited about 8 times over slightly more than 24 hours before they presented. Most showed signs of dehydration, and about half had diarrhea.

Intervention. Patients received intravenous injections of either 10 mg of prochlorperazine (PROC) or 25 mg of promethazine (PROM), both of which were diluted in 9 mL of normal saline. If needed, additional medication was administered. (The authors did not note whether there was a minimum amount of time between the initial dose of medication and any subsequent doses.)

Main outcome measures. Degree of relief, measured by a VAS at 0, 30, and 60 minutes from the initial dose. Secondary outcomes included time to complete relief (defined by the

patient), treatment failures (ie, needing additional doses of medication), and frequency of side effects.

Main results. At baseline, median VAS scores were 6.5 in the PROC group and 7.3 in the PROM group ($P = 0.23$). The PROC group showed greater improvement at 30 and 60 minutes (2.0 and 0.45, compared with 4.6 and 2.6 in the PROM group; $P = 0.004$ and $P < 0.001$) and had fewer treatment failures (9.5% versus 31%; $P = 0.03$). Patients receiving PROC experienced complete relief sooner than patients receiving PROM (33.4% versus 16.7% by 30 minutes and 83.4% versus 64.3% by 60 minutes, respectively; $P = 0.021$). Patients receiving PROC also had less drowsiness (38% versus 71%; $P = 0.002$). Fourteen percent of patients in both groups experienced akathisia.

Conclusion

When compared with PROM, PROC provides quicker relief with less drowsiness to more patients suffering from uncomplicated nausea and vomiting due to gastritis or gastroenteritis.

Commentary

Ernst and colleagues' study was nicely designed and executed. The results are relevant to routine clinical practice. There were no major flaws in the study. The authors chose to study a carefully chosen population with a very specific problem in a single setting. Therefore, this study does not establish the general superiority of PROC over PROM as an antiemetic drug.

Applications for Clinical Practice

While this study is small and the only one of its kind referenced on MEDLINE (when searched using subject terms "prochlorperazine" and "promethazine"), its results are striking enough to warrant a practice change for providers administering PROM for uncomplicated nausea and vomiting in the emergency department. Other studies have compared antiemetic drugs—although not these 2 in the same study—for chemotherapy- and anesthesia-induced nausea

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and vomiting [1,2]. The antiemetic that works best seems to depend partly on the underlying cause of nausea. Whether PROC is more effective for nonpharmaceutical-induced nausea of all causes has yet to be determined.

References

1. Chen JJ, Frame DG, White TJ. Efficacy of ondansetron and prochlorperazine for the prevention of postoperative nausea and vomiting after total hip replacement or total knee replacement procedures: a randomized, double-blind, comparative trial [published erratum appears in Arch Intern Med 1999;159:615]. Arch Intern Med 1998;158:2124-8.
2. du Bois A, McKenna CJ, Andersson H, Lahousen M, Kitchener H, Pinter T, et al. A randomized, double-blind, parallel-group study to compare the efficacy and safety of ondansetron (GR38032F) plus dexamethasone with metoclopramide plus dexamethasone in the prophylaxis of nausea and emesis induced by carboplatin chemotherapy. Oncology 1997;54:7-14.

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