Prochlorperazine was more effective than promethazine in uncomplicated nausea and vomiting in the emergency department

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 Aug;36:89-94.

QUESTION

In patients presenting to the emergency department (ED) with uncomplicated nausea and vomiting, is prochlorperazine more effective than promethazine?

DESIGN

Randomized {allocation concealed*},† blinded (patients, care providers, and statistician),* controlled trial with follow-up through ED stay.

SETTING

EDs of 2 university hospitals, 1 in Nashville, Tennessee, and 1 in Sacramento, California, United States.

PATIENTS

84 patients ≥ 18 years of age (mean age 29 y, 70% men) with presumed uncomplicated gastritis or gastroenteritis who presented to the ED and required intravenous hydration and administration of antiemetic. Exclusion criteria were substantial abdominal pain, serious illness, altered sensorium, previous use of antiemetic medications, inability to understand English, drug or alcohol use, or pregnancy.

INTERVENTION

42 patients were allocated to prochlorperazine, 10 mg intravenously, and 42 to promethazine, 25 mg intravenously.

MAIN OUTCOME MEASURES

Degree of relief of nausea as measured on a 100-mm visual analog scale (VAS), time to complete relief, need for further antiemetic medication (treatment failures), and side effects.

MAIN RESULTS

Relief of nausea at 30 and 60 minutes was greater in patients in the prochlorperazine group than in those in the promethazine group (median VAS change from baseline at 30 min, 4.5 vs 2.7 cm, $P = 0.004$; and at 60 min, 6.1 vs 4.7 cm , $P < 0.001$). Time to complete relief was shorter with prochlorperazine ($P = 0.021$). Fewer patients in the prochlorperazine group had treatment failures ($P = 0.03$) (Table). The groups did not differ for incidence of extrapyramidal side effects. Fewer patients in the prochlorperazine group complained of sleepiness ($P = 0.002$).

CONCLUSION

In patients presenting to the emergency department with uncomplicated nausea and vomiting attributable to gastroenteritis, prochlorperazine was more effective than promethazine in relieving symptoms.

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For correspondence: Dr. A.A. Ernst, Division of Emergency Medicine, Department of Medicine, University of California-Davis, 2315 Stockton Boulevard, PSSB 2100, Sacramento, CA 95817, USA. FAX 916-734-7950.

*See Glossary.

†Information provided by author.

Prochlorperazine vs promethazine at 60 minutes in uncomplicated nausea and vomiting in the emergency department‡

Outcome	Prochlorperazine	Promethazine	RRR (95% CI)	NNT (CI)
Treatment failure	10%	31%	69% (19 to 89)	5 (3 to 23)

‡Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

COMMENTARY

Nausea and vomiting attributable to gastroenteritis are common symptoms in the ED. Prochlorperazine and promethazine are the antiemetics of choice. Although numerous trials have investigated the efficacy of antiemetic agents in other clinical settings, this methodologically sound trial by Ernst and colleagues appears to be the first in the emergency treatment of gastroenteritis. No similar trials are included in the Controlled Trials Registry of the Cochrane Library (2000, Issue 4).

The differences between the prochlorperazine and promethazine groups reported in this study are probably clinically significant. The additional decline in median VAS score for nausea of 1.8 cm at 30 minutes and 1.4 cm at 60 minutes in patients receiving prochlorperazine compares favorably with the minimum clinically significant difference of 1.3 cm on a 10-cm VAS scale that has been reported and validated for pain research in emergency settings (1). The reported shorter time to complete relief of symptoms observed in the prochlorperazine group is advantageous from the perspective of practitioners in busy ED settings and will probably also be so perceived by patients. Estimating 30 to 60 minutes as the mean time to resolution of symptoms in the study population and 30 minutes as the minimum clinically important difference, a method proposed by Guyatt and colleagues (2), yields a number needed to treat (NNT) of 4 for achieving complete relief 30 minutes earlier with prochlorperazine than with promethazine. This finding coheres with the NNT of 5 for avoiding further antiemetic treatment. The upper limit of the 95% confidence interval for the latter NNT, 23, would retain clinical significance.

Most emergency practitioners are inclined to provide antiemetic therapy to patients presenting with acute gastroenteritis, and many will be more likely to use prochlorperazine as a result of these findings.

Peter Wyer, MD
Columbia University
New York, New York, USA

References

1. **Libman M, Berkoff D, Lahn M, Bijur P, Gallagher EJ.** Independent validation of the minimum clinically important change in pain scores as measured by visual analog scale [Abstract]. Acad Emerg Med. 2000;7:550.
2. **Guyatt GH, Juniper EF, Walter SD, Griffith LE, Goldstein RS.** Interpreting treatment effects in randomised trials. BMJ. 1998;316:690-3.

