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Proton pump inhibitors for preventing non-steroidal anti-inflammatory drug induced gastrointestinal toxicity: A systematic review

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Objective: Proton pump inhibitors (PPIs) are recommended for preventing gastrointestinal lesions induced by non-steroidal anti-inflammatory drugs (NSAIDs). We performed this study: (1) to evaluate the effectiveness and safety of PPIs, (2) to explore the association between effectiveness and potential influential factors, and (3) to investigate the comparative effect of different PPIs.

Methods: MEDLINE, EMBASE, and the Cochrane Library were searched to identify randomized controlled trials comparing different classes of PPIs, or comparing PPIs with placebo, H₂ receptor antagonists or misoprostol in NSAIDs users. Both pairwise meta-analysis and Bayesian network meta-analysis were performed.

Results: Analyses were based on 12,532 participants from 31 trials. PPIs were significantly more effective than placebo in reducing ulcer complications (relative risk [RR] ¼ 0.29; 95% confidence interval [CI], 0.20 to 0.42) and endoscopic peptic ulcers (RR ¼ 0.27; 95% CI, 0.22 to 0.33), with no subgroup differences according to class of NSAIDs, ulcer risk, history of previous ulcer disease, *Helicobacter pylori* infection, or age. To prevent one ulcer complication, 10 high risk patients and 268 moderate risk patients need PPI therapy. Network meta-analysis indicated that the effectiveness of different PPIs in reducing ulcer complications and endoscopic peptic ulcers is generally similar. PPIs significantly reduced gastrointestinal adverse events and the related withdrawals compared to placebo; there is no difference in safety between different PPIs.

Conclusions: PPIs are effective and safe in preventing peptic ulcers and complications in a wide spectrum of patients requiring NSAID therapy. There is no major difference in the comparative effectiveness and safety between different PPIs.

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