Antacids
Indications and Limitations

Chi-Kong Ching and Shiu-Kum Lam

Division of Gastroenterology and Hepatology, Department of Medicine, University of Hong Kong, Queen Mary Hospital, Hong Kong

Contents

Summary
1. Peptic Ulcer Disease
   1.1 How Efficient are Antacids in Ulcer Healing?
   1.2 What is the Best Way to Administer Antacids
   1.3 Does Cigarette Smoking Affect Antacid Healing?
   1.4 Does Antacid Healing Lead to Longer Remission?
   1.5 Does the Combination of an Antacid Plus an Anticholinergic Offer Any Advantage?
   1.6 Do Antacids Prevent Ulcer Recurrence?
2. How Do Antacids Work in Peptic Ulcer Disease?
   2.1 Reduction of Postprandial Acid Secretion
   2.2 Cytoprotection
   2.3 Bile Acid Binding
3. Gastro-Oesophageal Reflux Disease
   3.1 Medical Therapy for GORD
   3.2 Relief of Reflux Symptoms by Antacids
   3.3 Healing of Reflux Oesophagitis by Antacids
   3.4 Recommendations
4. Stress Ulcer Syndrome
   4.1 Prophylactic Treatment for Acute Stress Ulcer Syndrome
5. Pregnancy- and Delivery-Associated Reflux and Complications
6. Miscellaneous Use of Antacids
   6.1 Nonulcer Dyspepsia
   6.2 Nonsteroidal Anti-Inflammatory Drug-Induced Upper Gastrointestinal Mucosal Damage
7. Conclusions

Summary
Antacids have served us well for over a century. In terms of peptic ulcer disease, the attitude in the late 1950s to 1970s that antacids should be taken only on demand was unjustified and erroneous. 13 recent endoscopic controlled studies have confirmed the efficacy of antacids in the healing of duodenal ulcer, achieving about 75% healing in 4 weeks. The efficacy of antacids in promoting gastric ulcer healing has been less well studied and the results are controversial. The most appropriate and economical antacid regimens for the treatment of duodenal ulcer disease should include tablets or liquid that have acid neutralising capacity of 400 mmol/day given at least an hour after meals. As a long term therapy, antacids appear to work, but need be taken in multiple daily doses, a regimen which is unlikely to meet with long term patient compliance.
Patients with gastro-oesophageal reflux disorders or pregnancy-related reflux have also benefited from the usage of antacids ad libitum. Early previous studies have clearly demonstrated the efficacy of antacids in reducing gastro-oesophageal reflux and healing of reflux oesophagitis. The acidity of the gastric contents is the major determining factor in the outcome of the aspiration pneumonitis occurring during delivery. The prophylactic use of antacids during delivery has helped to reduce the severity of this complication. Similarly, the prophylactic administration of antacid aiming to maintain gastric pH between 3.5 to 7.0 has resulted in significant reduction of bleeding due to stress associated ulcers and/or erosive haemorrhagic gastritis in critically ill patients. Antacid therapy, however, is controversial in the management of nonulcer dyspepsia or nonsteroidal anti-inflammatory drug related upper gastrointestinal mucosal damage.

Undoubtedly, antacids have major roles to play in the treatment of gastric acid related disorders. They have clear advantages and disadvantages when compared with the antisecretory agents. New proton pump inhibitors in particular have certainly superseded antacids and even the H₂-receptor antagonists in many respects. However, the long term safety record of antacids remains unsurpassed by any of the new antisecretory agents.

The use of antacids probably began in the first century when Celsus used neutralising earths for the treatment of abdominal distress (Crohn & Rosenak 1935). Their formal use as an ulcer healing agent probably started in 1856, when William Brinton employed bicarbonate of potash in combination with bismuth to treat patients with gastric ulcer disease (Brinton 1865). Bertram Sippy in 1915 (Sippy 1915), following the pronouncement by Schwarz in 1910 of his famous dictum, ‘no acid - no ulcer’ (Schwarz 1910), pioneered the scientific use of antacids to treat peptic ulcer disease.

In the following 50 years, antacids were widely used and their popularity grew further. In 1952, Pickering demonstrated that neutralisation of the acid gastric contents helped to relieve pain induced by peptic ulcer (Pickering 1952). However, antacid therapy lost its momentum over the next 2 decades. Although they were still generally prescribed for peptic ulcer, antacids were usually given with the advice that a small quantity need only be taken when pain occurred. This was based on the concept, now known to be erroneous (Lam 1988), that dangerously large doses of antacid were necessary to neutralise gastric acidity and that antacids were unable to heal peptic ulcers.

The downfall of enthusiasm for antacid therapy coincided with the introduction of carbenoxalone (‘Biogastrone’) and later cimetidine. These new agents quickly caught the attention of most investigators who were then armed with 2 powerful tools: the endoscope as an end-point detector of ulcer healing and the method of randomised, controlled trial as a decision maker.

Using these 2 tools, Peterson et al. (1977) and Lam et al. (1979) attempted, with little success, to bring the attention of ulcer therapists back to antacids. Both of these studies showed that antacids healed about 75% of duodenal ulcers at the end of 4 weeks and that antacids were significantly superior in efficacy to placebo. They, however, used 7 doses of antacids daily in both protocols. The method, therefore, posed the problem of patient compliance. Despite a 5-fold difference in the quantity of antacid used, there was very little difference in the rates of healing duodenal ulcers between these 2 studies. Thus, there is very little doubt that antacids, even at low doses, accelerate ulcer healing.

Antacid therapy has similarly enjoyed a period of success in the treatment of gastro-oesophageal reflux disease (GORD), acute stress ulcer prophylaxis, and pregnancy-associated reflux disease as well as prophylaxis during delivery. These observations therefore raise a number of fundamental questions regarding the therapeutic mechanisms of the antacid. We aim to review the past, present and future roles of antacids in the management of upper gastrointestinal disorders. We consider the literature cited here to be important and relevant, but by no means exhaustive.