



Opinion

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Levofloxacin Based H. Pylori Eradication Therapy, should we Give it A better Consideration?

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Helicobacter pylori (H. pylori) infection, one of the most common bacterial infections, affects approximately 50% of the world's population [1]. H. pylori infection is a major cause of gastritis, gastric and duodenal ulcers, mucosal associated lymphoid tissue, and gastric cancer [2]. H. pylori eradication treatment has been proven to improve gastric inflammation, promote ulcer healing, and reduce the incidence of gastric cancer [3,4]. Furthermore, a "test-and-treat" approach is advocated for detecting and eradicating H. pylori in patients with dyspeptic symptoms but low gastric cancer risk [5].

H. pylori eradication treatment is becoming more challenging due to increasing antimicrobial resistance. Previously, a 7-d standard triple therapy consisting of a proton pump inhibitor (PPI), amoxicillin (AMPC), and clarithromycin (CAM) was recommended for eradicating H. pylori [6]. However, there has been a significant reduction in the eradication rate achieved with this regimen due to the increase in antimicrobial resistance of H. pylori. Resistance of H. pylori has reached alarming levels worldwide, which greatly affects the efficacy of treatment. The World Health Organization (WHO) published its first ever list of antimicrobial resistant "priority pathogens," which is a catalogue of 12 families of bacteria posing the greatest threat to human health. They indicated three priority statuses-critical, high, and medium-with CAM-resistant H. pylori being categorized as a high priority bacterium in the same tier as vancomycin-resistant Enterococcus faecium and methicillin-resistant Staphylococcus aureus [7].

A new strategy that can eradicate H. pylori as well as reduce the antibiotics used is required to prevent future antimicrobial resistance in H. pylori. Dual-therapy with vonoprazan, an oral potassium-competitive acid blocker (PCAB) and amoxicillin could be a breakthrough for H. pylori eradication in an era of growing

antimicrobial resistance. This regimen may provide a satisfactory eradication rate of H. pylori and also minimize antimicrobial resistance due to single antibiotic use and the strong inhibitory effect of vonoprazan on gastric acid secretion [8]. However, PCABs are not available outside of Asia, and data on safety and comparative efficacy with other antisecretory agents are limited [9].

Because of increasing failure of therapy, the Toronto consensus group strongly recommended that all H. pylori eradication regimens be given for 14 days. Recommended rescue therapies include PBMT (PPI + bismuth + metronidazole + tetracycline) and levofloxacin-containing therapy (PPI + amoxicillin + levofloxacin) [10]. Between 2002 and 2014, 110 patients in 14 medical centers received levofloxacin-based third-line H. pylori eradication therapy for peptic ulcer disease. The overall eradication rate was 71.6%. It was concluded that Levofloxacin-based third-line H. pylori eradication showed efficacy similar to that of previously reported first/second-line therapies [11].

Levofloxacin-containing therapy is an alternative first-line regimen [12] and consists of a PPI plus amoxicillin 1 g BID plus levofloxacin 500 mg QD. 10 days (eradication rates of up to 83.1%) [13]. 10-14 days is recommended by the 2017 American College of Gastroenterology Guidelines [14]. Sequential therapy, an alternative first-line regimen, is as follows (eradication rates of up to 86.5%): PPI (esomeprazole 20 mg or 40 mg BID) plus amoxicillin (1 g BID) for 5-7 days, then PPI (esomeprazole 20 mg or 40 mg BID) plus levofloxacin (250 mg or 500 mg BID) plus a nitroimidazole antibiotic (eg, tinidazole 500 mg BID) for 5-7 days [14]. A randomized trial investigated the role of bismuth in levofloxacin-containing 14-day sequential therapy and concluded that adding bismuth did not significantly improve eradication rates (85.2% vs. 82.6%). Concomitant therapy, another alternative first-line regimen is as

follows (eradication rates of up to 96.5%): PPI (esomeprazole 40 mg BID) plus amoxicillin (1 g BID) plus levofloxacin (500 mg QD) plus another antibiotic (eg, tinidazole 500 mg BID) for 5 days [15].

Levofloxacin-based triple therapy has demonstrated efficacy as a salvage regimen in patients who have failed initial clarithromycin triple therapy or bismuth quadruple therapy. Levofloxacin triple therapy has also demonstrated efficacy in patients who have failed two prior attempts at treatment. In a pooled analysis from six European cohort studies, when used as a salvage regimen in patients who had failed two previous eradication attempts, levofloxacin triple therapy administered for 10 days has a pooled eradication rate of 73 percent [16]. Most patients in these studies were treated with clarithromycin triple therapy followed by bismuth quadruple therapy.

Acknowledgement

None.

Conflict of Interest

No conflict of interest.

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