Effect of Proton Pump Inhibitor Based Triple Therapy with Apple Cider Vinegar on Helicobacter Pylori Eradication

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Abstract

Background: The purpose of this study was to evaluate the effect of apple cider vinegar plus PPI-based triple therapy on eradication of Helicobacter Pylori (H.pylori) infection. Materials and Methods: 116 patients with H. pylori infection were included in this randomized clinical trial. Patients in control group (n=59) received amoxicillin, clarithromycin, and pantaprazole twice daily. Patients in study group (57 patients) received the same regimen plus 30 mL of apple cider vinegar twice daily. The duration of therapy for study and control were 10 and 14 days respectively. Four weeks after the completion of therapy, Urea breath test was performed to assess the success of H.pylori infection eradication. Results: 86% of patients in control group in comparison to 88% in apple cider vinegar group responded to eradication therapy (P=0.41). Conclusion: Addition of apple cider vinegar to proton pomp inhibitor (PPI)-based triple therapy may decrease the duration of H. pylori treatment but it was not statistically significant. Thus, our results showed no efficacy of apple cider vinegar in H. pylori eradication treatment.[GMJ. 2014;3(2):90-94]

Keywords: Apple Cider Vinager; Helicobacter Pylori; Endoscopy; Proton Pump Inhibitor; Antibacterial Treatment
ly used antibiotics [7]. Crude extracts and iso-
olated compounds from plants used in herbal
traditional medicines have been tested for an-
ti-H. pylori activity in vitro, in animal models,
as well as in clinical studies as possible sourc-
es for alternative eradication therapies [8-10].
One study showed the in vitro anti-H. pylori
activity of some carotenoids of the apple peel
extracts [11]. Apple cider vinegar (ACV),
which is derived from apple, contains 4% ace-
tic acid, polyphenols, pectin and carotenoids
with antibacterial and prebiotic properties
[12-14]. As ACV have antimicrobial activity
and to our knowledge, there has been no study
to assay the anti-H. pylori activity of ACV;
therefore, we conducted a prospective con-
trolled study with the aim of testing whether
adding ACV supplement to a ten-day proton
pump inhibitor based (PPI-based) triple ther-
apy could have an acceptable influence on H.
pylori eradication in comparison with the rou-
tine two week anti-H. pylori regimen.

Materials and Methods

One hundred twenty patients with an indica-
tion for endoscopy of dyspeptic symptoms
who were admitted to a gastroenterological
clinic of Emam Ali university hospital in Ilam
from March 2011 to September 2012 were in-
cluded in this randomized clinical trial study.
Patients were matched for sex and random-
ly divided into two groups. All patients un-
derwent endoscopy and Rapid Urease Test
(RUT). RUT positive patients without ulcer
were selected for the study. Exclusion criteria
were consumption of H2 antagonists, proton
pump inhibitors and antibiotics in four recent
weeks. Also, the ones who had gastrointes-
tinal bleeding in recent four weeks were ex-
cluded from the study. The study protocol was
approved by responsible ethics committee and
registered in Iranian registry of clinical trials
with code of IRCT2013100614901N1. Fur-
thermore, informed consents were obtained
from the participants. Patients were ran-
domised by using a computer-generated list to
receive either a standard 14-day triple therapy
with 40 mg pantaprazol, 1 g amoxicillin, and
500 mg clarithromycin twice daily in control
group or the same drug regimen plus 30 mL of
raw, unfiltered ACV in a glass of water twice
daily after meal for 10 days in study group.
Red delicious apples were used to produce
natural apple cider in laboratory of nutrition
department. The duration of the therapy for
the study group was ten days (for receiving
ACV). The patients were asked to return to
assess the compliance with the therapy, and
to estimate the incidence of side effects at the
end of the treatment. The compliance was de-
defined as the consumption of >90% of the pre-
scribed drugs and ACV by personal interview
at the follow-up visit at the end of the therap-
py. During the four consecutive weeks after
discontinuation of the treatment, the patients
were free of medication. After this period,
urea breath test (UBT) was performed for all
the participants.

SPSS software 14.0 was used for data analy-
sis. Student t test was used to compare con-
tinuous variables in two groups. Categorical
data between the groups were compared using
the Chi-square test. P-value less than 0.05 was
considered as significant.

Results

The mean age of patients was 42.5±3.5 years.
One patient in the study group and three pa-
tients in control group stopped the treatment
due to non-compliance and minor side effects.
These side effects in control group were vom-
it ing, loose stool, and headache in the study
group. Therefore a total of 59 patients in ACV
group and 57 patients in control group com-
pleted the study. The duration of therapy in
study group was 10 days versus two weeks
in control group. Endoscopic results in study
group were as 4 patients with ulcer, 20 eryth-
ema, 17 erosion and 18 without obvious lesion.
These findings in control group were as 4 pa-
tients with ulcer, 19 erythema, 18 erosion and
16 without obvious lesion.

The eradication rate of H. pylori was 88% in
study group and 86% in control group (P=
0.41) (Table-1). The H. pylori eradication rate
did not differ between male and female pa-
tients (48/55, 87% vs. 53/61, 86%; p = 0.71).
Also eradication rate did not differ between
smokers and non-smokers (17/20, 85% vs.
84/96, 87%; P = 0.81).
Discussion

In our study we assumed that adding ACV to PPI-based triple therapy might reduce the duration of the antibacterial treatment for the eradication of H. pylori infection, though it was not considerable according to statistical analyses. Unfortunately, there are two problems with H. pylori treatment; resistance to antibiotics that are commonly used in a number of eradication regimens and compliance with medications. It has been shown that Metronidazole resistance is significantly more common in women and Clarithromycin resistance is significantly associated with the geographic region, older age, and the presence of inactive ulcer disease [15]. The side effects of the medications are reported in up to 50 percent of patients taking the triple therapy regimens [16]. As the duration of anti H. pylori therapy is long, the compliance of the patients is weak and they discontinue their treatment. Thus, the treatment failure is associated with the H. pylori strains which are resistant to the commonly used antibiotics. Since an initial attempt at eradicating H. pylori fails in approximately 20 percent of the patients [17], continuous search for novel therapeutic approaches to cure H. pylori is needed. Some new, botanical therapy regimens have been recently proposed [8-11]. Raw, unfiltered ACV is an antibacterial agent and a good source of prebiotics. The anti-bacterial effect of ACV is known against different pathogens in vitro [12-13]. It has shown that apple has in vitro anti-H. pylori activity comparable to metronidazole [11]. ACV is also a good source of prebiotics. In the large intestine and colon, microorganisms degrade pectin and liberate oligofructose and short-chain fatty acids that have prebiotic effects [14]. Prebiotics stimulate the growth and/or the activity of bifidobacteria and lactic acid bacteria in the digestive system. It has been shown that probiotics, which are live nonpathogenic bifidobacteria and lactic acid bacteria that benefit a host through altering gut microflora composition, may reduce the side effects of standard H. pylori treatments, especially diarrhea. As a result, they may be useful adjuncts to improve the tolerability and compliance with more traditional antibiotic regimens [18-19]. As some probiotics have antimicrobial effects [20, 21], they have been proposed as treatment for H. pylori infection but they should not be considered a substitute for standard antibiotic treatments [22].

ACV also has galacturonic acid which reduces the gastrointestinal tract inflammation in the animal model [23]; thus may reduce the side effects of standard H. pylori treatments. ACV has significant amount of phenolics [24]. As free radicals play an important role in the pathogenesis of gastroduodenal mucosal inflammation, peptic ulcer disease and probably even gastric cancer, various micronutrients with antioxidant compounds are considered to protect the gastric mucosa by scavenging the free radicals [25].

On the other hand proton pump inhibitor agents which are used in PPI-based triple therapy act by selectively oxidizing thiol targets in the gastric proton pump, but they also appear to be toxic to the gastric mucosa. It has been shown that antioxidant therapy prevents this toxic effect [26]. Thus the presence of significant amount of phenolics in ACV may have preventive effects on the oxidative damage of PPI agents [27].

Conclusions

Addition of raw, unfiltered ACV to H. pylori treatment regimen of amoxicillin, clarithromycin and pantaprazole may decrease dura-

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<tr>
<th>Table-1. Characteristics of the Subjects (Means±SEM)</th>
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<tr>
<td>Study group (n=59)</td>
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<tr>
<td>Age</td>
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<tr>
<td>Sex (%)</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Smoking</td>
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<td>Eradication Rate</td>
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<td>Days of Therapy</td>
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*Analysis by independent t test*
tion of H. pylori treatment, better compliance in patients and therefore might decrease bacterial resistance to antibiotics. Although our results showed no significant difference in H. pylori eradication by adding ACV to the regimen, but the same results was seen in the ACV group by a 10 days trial compared to the control group by a two weeks treatment. Given the small sample size in this trial, larger studies are needed to confirm these benefits.

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References


