

Comparative study of TIMP-1 and MMP-2 ratios in patients with sensitive and refractory *Helicobacter pylori* gastric peptic ulcer

Abstract

Background: *Helicobacter pylori* is one of the main causes of peptic ulcer. Successful treatment of *Helicobacter pylori* (*H. Pylori*) infection is a global challenge due to the increasing prevalence of antibiotic resistance. Studies have shown that matrix metalloproteinases and their inhibitors are effective in the process of peptic ulcer formation and repair, which may indicate that they can be used as a factor in measuring the healing process of wounds.

Aim: The aim of this study was to compare the ratio of TIMP-1 and MMP-2 in patients with sensitive and resistant peptic ulcer to *Helicobacter pylori* treatment.

Materials and Methods: In this study, 95 patients who underwent endoscopy and were diagnosis with peptic ulcer due to *Helicobacter pylori* infection by a gastroenterologist, and were treated with standard 4 drug eradication regimen and afterward for confirming the eradication of the infection, test for *Helicobacter pylori* antigen in stool was checked were enrolled. Among these patients, 54 patients were considered as resistant group with positive stool antigen, and 41 patients were considered as sensitive group with negative antigen treatment. 20 patients with normal endoscopy were included in the study as the control group. After obtaining consent from the patients, 5 cc of blood samples were taken to determine the blood levels of MMP-2 and TIMP-1 and then the ratio of MMP-2 and TIMP-1 was evaluated.

Results: The mean age of all patients was 52.23 ± 9.29 years. For people with peptic ulcer, a significant increase in the ratio of MMP-2 to TIMP-1 was observed ($P < 0.05$). There was a significant relationship between MMP-2 to TIMP-1 ratio with response to treatment and endoscopic evidence of patients and this ratio was highest in people who had peptic ulcer in the stomach and

duodenum at the same time compared to other types of ulcers ($P < 0.05$). Also, the highest resistance was observed in the group of simultaneous peptic ulcer of the stomach and duodenum, peptic ulcer of the stomach alone, peptic ulcer of the duodenum alone and the lowest in the control group, respectively ($P < 0.05$).

Conclusion: The results of statistical samples showed that peptic ulcer due to H. Pylori infection increases the ratio of MMP-2 and TIMP-1. It is possible that it can be used as a predictor of resistance to treatment in Helicobacter pylori patients.

Keywords: MMP-2, TIMP-1, peptic ulcer, Helicobacter pylori infection