

Effects of *Helicobacter pylori* Infection and Western Diet on Migraine

Sayed Alireza Mirsane,^{1*} and Shima Shafagh²

¹Kashan University of Medical Sciences, Kashan, IR Iran

²Medical School, Kashan University of Medical Sciences, Kashan, IR Iran

*Corresponding author: Sayed Alireza Mirsane, Kashan University of Medical Sciences, Kashan, IR Iran. Tel: +98-3157232469, E-mail: alireza.seyed70@gmail.com

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Dear Editor,

Migraine is an early headache discomfort determined by rebound headaches that are modest to intense. This affliction is usually worsened by physical activity (1). The disorder causes many problems in daily activities and human life. Worldwide, migraines develop in females than males (2). In the US, it occurs 6% in males and 18% in females. Unfortunately, migraine commonly starts at the age of 15 - 24 years old (3). Therefore, any actions to improve the disorder are very important. Molecular and cellular investigations are necessary to recognize the causing factors. Hence, by recognition stimulated factors in cellular and molecular dimensions, procedures can be obtained to promote health and reduce difficulties of migraine. The current study investigated the effects of increasing HT-5 level due to *Helicobacter pylori* and using diet; since in the developing countries such as Iran, the rate of *Helicobacter pylori* is very high (4) and also the rate of Western diet adherents is increasing among the population (5).

A research explained that gastrointestinal neuroendocrine cells such as enterochromaffin cells (EC cells) can synthesize and secrete serotonin (5-hydroxytryptamine; 5-HT) and some factors that motivate the cell to secrete 5-HT can cause central nervous system (CNS) perturbation via the brain-gut axis, which can demonstrate that most patients with migraine assaults are associated with gastrointestinal (GI) symptoms (6, 7). Inflammation motivates the cell to secrete 5-HT e.g., when *Helicobacter pylori* (HP) infect a cell (6). Eradication therapy of HP infection has helpful outcomes to improve clinical attacks (8). Pashapour et al. checked the effective results of HP eradication treatment in patients with migraine attacks and concluded that treatment of this bacterium can remedy or reduce the intensity and period of migraine headaches (9). Also, Tunca et al. suggested that treating HP infection in patient with migraine can be helpful to treat the attacks of this disorder (10). Researchers also detected that some diets such

as western diet can increase the level of 5-HT. Researchers on the effects of Western diet on the 5-HT level in rats explained that Western diet up regulates serotonin synthesis genes and reduces re-uptake of serotonin that can cause increase of 5-HT quantity of EC cells (11). Western diet consists of high consumption of red meat, processed meat, high-sugar drinks, French fries and high-fat dairy products (12, 13).

Based on the aforementioned information, treating HP infection and promotion of diet quality have helpful effects on relieving migraine treatment. These interventions can decrease intensity and period of this disorder since they motivate the cell to secrete 5-HT that creates CNS disorder via the brain-gut axis and it increases the intensity and period of migraine headaches. HP infection and Western diet can stimulate EC cells to synthesize and secrete 5-HT that following it the mentioned problems occur; therefore, two important stimulators play serious roles in intensifying migraine attacks by increasing the secretion of 5-HT. Eradication therapy of HP infection showed that this treatment is useful for migraine attacks, surely one of the reasons is the improvement of 5-HT increase level through inflammation treatment that causes HP. On the other hand, Western diet is a factor to up regulate 5-HT, while this factor can cause reduction of 5-HT re-uptake; therefore it can increase the level of 5-HT. Also, scholars confirmed that high-fat diet in mice can cause over expression of gastric leptin linked to gut pathway of 5-HT. They demonstrated that elimination of intestine-specific of leptin signaling has notable reduction in the amount of duodenal mucosa 5-HT and they agreed that the gastric leptin is up regulated in obese individuals (14). Certainly most foods of the Western diet have high-fat level and also can create or augment obesity (15, 16). Therefore, these matters augment gastric leptin and the increase of gastric leptin is the cause of 5-HT augmentation. Thus, Western diet is a risk factor of increasing the intensity and period of migraine headaches. Finally, considering the nutrition and eradication therapy

of HP infection are the key operational objectives to promote the health of patient with migraine.

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