

## **Helicobacter Pylori Infection and Duodenal Ulcer Disease in Bangladesh**

*Helicobacter pylori* is the most prevalent bacterial infection affecting mankind with approximately half the world's population being infected. The majority of the adverse clinical outcomes related to this infection occur in developing countries, where the infection is most prevalent<sup>1</sup>. *H. pylori* infection is the most important aetiological factor in the development of chronic gastritis and peptic ulcer disease. There is very strong evidence that this infection increases the risk of gastric cancer and gastric mucosa associated lymphoid tissue lymphoma (MALT lymphoma)<sup>2</sup>. *H. Pylori* eradication in patients with peptic ulcer disease is associated with ulcer healing and a very low rate of recurrence in developed countries<sup>3,4</sup>. Consequently, this is the treatment of choice for peptic ulcer disease associated with *H. pylori* infection and several expert groups in developed countries have recommended guidelines in this respect<sup>1</sup>.

Studies of *H. pylori* eradication therapy in developing countries has shown equivocal results. This prompted investigations on *H. pylori* infection and peptic ulcer disease in Bangladesh where the prevalence of these diseases has been found to be high. A study conducted in four villages five miles away from Dhaka city has shown the point prevalence of duodenal ulcer (DU) to be 11.98% and that of gastric ulcer to be 3.5%<sup>5</sup>. The prevalence of *H. pylori* infection is also very high. Studies conducted in Bangladeshi children by scientists of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDRDB) has shown that 60% of the children are infected by the age of three months and 80% are infected by the age of three years<sup>6</sup>. A seroprevalence study of 268 apparently healthy Bangladeshi subjects between the ages of 15 and 40 years showed 91% to be positive for *H. pylori* antibody<sup>7</sup>. *H. pylori* study group of Bangladesh was formed in 1994 to investigate *H. pylori* infection in Bangladeshi population, its association with peptic ulcer disease

and to find out most effective eradication therapy and the recurrence rates after eradication<sup>8</sup>. The first therapeutic trial was to examine the outcome of treatment with two dual therapy (omeprazole, amoxicillin and ranitidine, amoxicillin) and two triple therapy regimens (omeprazole, tinidazole, amoxicillin and colloidal bismuth citrate, amoxicillin, metronidazole)<sup>9</sup>. Healing rates with the dual therapy regimens were found to be 67-69% and that with the triple therapy regimens were 85-89%. The second trial was undertaken in two phases to compare the efficacy of furazolidone and metronidazole based triple therapies and to examine the recurrence rates of *H. pylori* infection<sup>10</sup>. Different groups of DU patients were treated with five different triple drug regimens. Taken as a whole, the eradication rate was found to be 86% and there was no significant difference in the eradication rates of the different regimens. Subsequent studies by investigators in Bangabandhu Sheikh Mujib Medical University and the Combined Military Hospital have shown the eradication rates to be much lower.

In most of the studies, the eradication rate was between 30 and 64%<sup>11,12,13</sup>.

Studies in other developing countries have shown conflicting results regarding the eradication rate after therapy. Many studies from India, Pakistan, and Iran have reported eradication rates which are lower than the rates obtained in developed countries and comparable to rates achieved in Bangladesh<sup>14, 15,16</sup>. The reason for the lower eradication rates is not clear. A number of factors may contribute to this. These include: bacterial resistance to drugs, bacterial virulence and host factors. Poor patient compliance and bacterial resistance to drugs have been taken into account in later trials and appear to be unlikely to explain the lower eradication rate. High prevalence of *H. pylori* *cag A* and *vac A* has been reported from

Bangladeshi people<sup>17</sup> but the relationship of these virulence factors to poor response and recurrence has not been investigated. Host factors have not been studied.

Recurrence rates after eradication are much higher in Bangladesh than in developed countries. The re-infection rate was found to be 18% after one year<sup>10</sup>. Follow up of the patients who achieved eradication showed recurrence of 39% after six years (personal communication). High recurrence rates after eradication have also been reported from India, Brazil, Chile and Vietnam<sup>18,19,20</sup>. Lower recurrence rates have also been reported in some studies from developing countries<sup>21,22,23</sup>. The variability of the recurrence rates may be due to lower sensitivity of detection of recurrence in studies which have relied on urea based tests only or on a single test. These may also represent true inter-country differences. Although recurrence of H.pylori infection appears to be high in many developing countries, ulcer recurrence have been reported to be low in patients who have had recurrent infection<sup>18</sup>. If the long term ulcer recurrence is lower in patients who have recurrence of infection after eradication therapy than the natural recurrence rate, it may still be justifiable to give eradication treatment. A comparison of cost effectiveness of eradication therapy versus conventional therapy is in progress in Bangladesh to examine this question.

H. pylori eradication as the mode of treatment for duodenal ulcer disease in Bangladesh therefore poses a problem unlike that in developed countries. The eradication rates are much lower and below the level which is usually considered to be acceptable. The recurrence rates are also very high. Similar findings have been reported from other developing countries. Further works need to be done in order to identify factors responsible for this phenomenon so that more effective therapy for eradication can be found. Till such time, recommendation for H. pylori eradication for routine treatment of duodenal or gastric ulcer, especially in the setting of general practice, may only be given selectively to patients who are likely to be compliant. Success or failure of eradication should be monitored. Work is continuing with newer eradication regimens in Bangladesh to find out better

therapies. Studies on cost-effectiveness of eradication compared to conventional therapy is also ongoing. It is hoped that these will yield results that will further the quest for optimal therapy of peptic ulcer diseases.

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*(J Bangladesh Coll Phys Surg 2005; 23 : 50-52)*

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