USE OF CLO TEST IN THE DETECTION OF
HECOBACTER PYLORI INFECTION AND ITS
CORRELATION WITH HISTOLOGIC GASTRITIS

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Campylobacter pylori or campylobacter like organisms (CLO) are curved bacilli which are found on the
gastric mucosa of patients suffering from gastritis1,2, peptic ulceration3 and other related diseases4,5.
These organisms were later renamed as helicobacter pylori. The diagnosis of HP is usually made on
histology, culture, urease tests and serology. Although all these tests are 60-100% sensitive and
specific6-9 but all, except urease test, give results in 48-72 hours. The CLO test is a rapid urease test
which, in 75% of the cases, turns the yellow gel into pink within 20 min of incubation10 and by 1 hour,
85% of the positive individuals would be picked up. The results are, therefore, available before the
patient leaves the endoscopy room or the hospital. The gross appearance of the mucosa at endoscopy is
of no value in detecting H. pylori infection1 and the macroscopic appearance of infected persons ranges
from a completely normal mucosa to ulceration. To determine the frequency of HP infection and
histologic gastritis in our patients a study was done in 100 consecutive patients undergoing endoscopy
for various reasons and correlate CLO positivity with gastritis and the presence of bacteria within the
tissue.

PATIENTS, METHODS AND RESULTS

One hundred consecutive patients undergoing upper G.I. endoscopy for various reasons were included
in the study. Patients giving a history of intake of bismuth preparation or an antibiotic in the last 7 days
were excluded. Endoscopy was done after an overnight fast; 4% xylocaine was used as a topical
anaesthetic and no sedation was given. Using Olympus XQ10 scope, detailed examination of the
oesophagus, stomach and duodenum was made and any pathology found was noted. Two antral biopsy
specimens were taken approximately 5 cms from the pylorus; first sample was picked by a disposable
needle and embedded in the CLO well10 and the slide was resealed, while the second sample was
placed in 10% buffered formalin for further histological workup. After each procedure, the gastroscope
and the biopsy forceps were washed with tap water followed by soap water, then again tap water and,
later, sterilized distilled water. Absolute alcohol was used to rinse the biopsy channel and forceps at the
end of each session. Biopsy sample was stained with H&E and Giemsa stain. Histologic gastritis and
the presence of helicobacter pylori in the tissue were graded from grade 0-4 as described elsewhere11.
Of 100 patients selected for the study, 96 were finally analyzed (4 had incomplete records). There were
74 males and 22 females, whose ages ranged from 15-75 years (maximum frequency 20-50 years).
Indications for endoscopy were follow-up of duodenal ulcer 45 cases, oesophageal varices 25,
epigastric pain 18, heartburn 6 and upper G.I. bleeding in 2 cases. Endoscopic diagnosis and its
association with CLO positivity is shown in Table I.
Helicobacter pylori colonization was found in almost all types of lesions and even in apparently normal looking upper G.L tract where the frequency of its colonization was 76%. The correlation of histology with the presence of bacteria within the tissue and CLO positivity is shown in Table II.

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Total</th>
<th>CLO +VE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duodenal ulcer</td>
<td>33</td>
<td>26</td>
<td>78</td>
</tr>
<tr>
<td>Oesophagitis/hiatus hernia</td>
<td>25</td>
<td>18</td>
<td>72</td>
</tr>
<tr>
<td>Normal</td>
<td>17</td>
<td>13</td>
<td>76</td>
</tr>
<tr>
<td>Gastritis</td>
<td>12</td>
<td>10</td>
<td>83</td>
</tr>
<tr>
<td>Duodenitis</td>
<td>5</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>Oesophageal varices</td>
<td>3</td>
<td>2</td>
<td>67</td>
</tr>
<tr>
<td>Gastric ulcer</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
</tbody>
</table>

VLO product information. CLO (campylobacter like organisms) test is a sealed slide holding an agar gel which contains urea, phenol red (PH indicator), buffers and bacteriostatic agents. Slides are stored at 2-8°C and have a shelf life of 12 months. Presence of urease enzyme produced by HP turns the yellow gel into pink colour within 5 minutes of its embedding.

Helicobacter pylori colonization was found in almost all types of lesions and even in apparently normal looking upper G.L tract where the frequency of its colonization was 76%. The correlation of histology with the presence of bacteria within the tissue and CLO positivity is shown in Table II.

<table>
<thead>
<tr>
<th>Histology</th>
<th>Total</th>
<th>+VE (%)</th>
<th>-VE</th>
<th>+VE (%)</th>
<th>-VE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. atrophic gastritis with activity</td>
<td>37</td>
<td>31(84%)</td>
<td>6</td>
<td>29(78%)</td>
<td>8</td>
</tr>
<tr>
<td>Ch. atrophic gastritis without activity</td>
<td>10</td>
<td>9(90%)</td>
<td>1</td>
<td>8(80%)</td>
<td>2</td>
</tr>
<tr>
<td>Ch. superficial gastritis with activity</td>
<td>19</td>
<td>16(84%)</td>
<td>3</td>
<td>18(95%)</td>
<td>1</td>
</tr>
<tr>
<td>Ch. superficial gastritis without activity</td>
<td>25</td>
<td>17(68%)</td>
<td>8</td>
<td>15(60%)</td>
<td>10</td>
</tr>
<tr>
<td>No significant change</td>
<td>3</td>
<td></td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Not available</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A strong correlation was found between CLO positivity, histologic gastritis and the presence of bacteria in the tissue.

**COMMENTS**

The overall frequency of H.P. infection in our patient population was 76% with 83% positivity in gastritis, 80% in duodenitis and 78% in duodenal ulcer. Thirteen of 17 cases, who had no apparent lesion on endoscopy, were CLO positive and had histologic evidence of HP infection. These findings are similar to the reports received from other developing countries. A strong association of HP and antral gastritis has been noted in lower socioeconomic class, crowding, large family size, ethnic group (more in blacks) and hot and humid climate. All these factors strongly predispose our population to get infected with HP. The mode of transmission is unknown but the geographic and social pattern of HP
infection are consistent with faecal oral transmission. Though treatments are available not only to clear the infection but also to eradicate it, a high reinfection rate and chances of drug resistance should be kept in mind while treating patients in our country. As a very strong association of CLO positivity was found with histologic gastritis, therefore, in areas where CLO test is not available, antral biopsies could be used not only to see the histologic gastritis but also for the confirmation of bacteria within the tissue.

REFERENCES

10. CLO test. Manufactured by Delta West Limited, Western Australia.