Exfoliative Cytology In The Clinical Evaluation Of Gastric Ulcer

Joseph A. Rinaldo Jr.
James A. Marvel
Gerald Fine
Elizabeth Watson

Follow this and additional works at: https://scholarlycommons.henryford.com/hfhmedjournal

Part of the Analytical, Diagnostic and Therapeutic Techniques and Equipment Commons, Life Sciences Commons, Medical Specialties Commons, and the Public Health Commons

Recommended Citation
Available at: https://scholarlycommons.henryford.com/hfhmedjournal/vol7/iss3/11

This Article is brought to you for free and open access by Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Henry Ford Hospital Medical Journal by an authorized editor of Henry Ford Health System Scholarly Commons. For more information, please contact acabrer4@hfhs.org.
EXFOLIATIVE CYTOLOGY IN THE CLINICAL EVALUATION OF GASTRIC ULCER

JOSEPH A. RINALDO, JR., M.D.,* JAMES A. MARVEL, M.D.,*
GERALD FINE, M.D.,** AND ELIZABETH WATSON***

The application of conventional methods — radiographic examination of the stomach, gastric analysis, gastroscopy, and medical treatment as a test of healing — has resulted in good separation of benign and malignant ulcers. The study of exfoliative cytology has become well established in recent years and has been utilized to improve diagnostic accuracy in the patient with a gastric lesion. The present study is an attempt to delineate the specific indications for the latter.

METHODS

The records of all patients who had cytology examination of gastric washings at Henry Ford Hospital through November 1, 1958 were reviewed. One hundred and four patients were selected because they had a final diagnosis of gastric ulcer or gastric malignancy. Seventy three had benign gastric ulcer. A patient was considered to have benign gastric ulcer if he had no recurrence of symptoms for 12 months (65 patients), or a diagnosis of benign gastric ulcer on a resected specimen (8 patients). Twenty two had carcinoma of the stomach and 1 Hodgkin's disease of the stomach all proven by tissue examination. Eight patients were felt to have benign ulcer but could not be classified because of unsatisfactory followup.

Cytology study was performed according to the technique of Rubin. Seven mgm. of chymotrypsin B was added to 500 ml. of an acetate buffer of pH 5.6 and introduced into the stomach. The patient was rotated for 8 minutes and the fluid was withdrawn. The aspirated fluid was kept on ice, and was centrifuged and fixed promptly. An average of 6 slides per case were screened by an experienced cytotechnician and reviewed by a pathologist. Collection of fluid was done by a nurse in most cases.

RESULTS

Our accuracy in the diagnosis of gastric malignancy by the cytology technique is recorded in Table 1. Possible errors in diagnosis can be ascribed to several factors which include the manner of collection, variation in clinical material, fixation of slides, and accuracy of interpretation. Analysis of the 5 false negative results revealed that the collection of the exfoliated material was the most vulnerable part of the procedure. Two false negative results were obtained in patients with lesions at the

*Division of Gastroenterology.
**Department of Pathology.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Washing</td>
<td>14</td>
<td>9</td>
<td>61</td>
</tr>
<tr>
<td>Second Washing</td>
<td>18</td>
<td>5</td>
<td>78</td>
</tr>
</tbody>
</table>

216
Cytology in Gastric Ulcer

esophagogastric junction. One of these patients had a normal esophagoscopy; and the other, an esophageal stricture that a string could not pass. The slides of the other three patients were studied repeatedly with out finding malignant cells. In each of these three cases gastric washing was performed only once and there was no opportunity to repeat the study.

The accuracy of each of the other methods in the diagnosis of benign and malignant lesions is presented in Tables 2 and 3. In tabulating the results the opinion

Accuracy of Other Methods in Gastric Malignancy

<table>
<thead>
<tr>
<th>Method</th>
<th>Interpreted Malignant</th>
<th>Interpreted Benign</th>
<th>Not Done</th>
<th>% Correct Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-ray</td>
<td>19</td>
<td>4</td>
<td>0</td>
<td>82</td>
</tr>
<tr>
<td>Endoscopy*</td>
<td>9</td>
<td>2</td>
<td>12</td>
<td>82</td>
</tr>
<tr>
<td>Gastric Analysis</td>
<td>4**</td>
<td>12</td>
<td>7</td>
<td>25</td>
</tr>
</tbody>
</table>

*See Text
**No free acid even with histalog stimulation

Table 2

Accuracy of Methods in Proved Benign Gastric Ulcer

<table>
<thead>
<tr>
<th>Method</th>
<th>Interpreted Malignant</th>
<th>Interpreted Benign</th>
<th>Unsatisfactory</th>
<th>Not Done</th>
<th>% Correct Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-ray</td>
<td>9</td>
<td>64</td>
<td>0</td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>Endoscopy</td>
<td>3</td>
<td>16</td>
<td>13</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>Gastric Analysis</td>
<td>1*</td>
<td>66</td>
<td>0</td>
<td>6</td>
<td>98</td>
</tr>
<tr>
<td>Cytology</td>
<td>0</td>
<td>72</td>
<td>1</td>
<td>0</td>
<td>98</td>
</tr>
</tbody>
</table>

*No free acid even with histalog stimulation.

Table 3

of the radiologist at the time of the initial examination was recorded. With few exceptions a single endoscopic study was performed in both groups. Four patients with carcinoma of the stomach had esophagoscopy and a biopsy was taken in 3 of these. One yielded malignant tissue, and the other two, normal esophagus. Forty-three patients had gastroscopy. Gastric analysis was interpreted as indicating a malignant lesion only if there was no free acid after histalog stimulation.

Diagnostic accuracy was improved by combining the results of the various tests. In the group of patients with gastric malignancy 20 patients had a correct diagnosis by conventional techniques. One of three patients diagnosed incorrectly by the latter combination was correctly diagnosed by cytologic study. The remaining two patients in this group were misdiagnosed preoperatively by all methods.

There were 6 patients who had benign gastric ulcers that were called malignant by a combination of radiographic examination, gastroscopy, and gastric analysis. Each of these was correctly diagnosed by the cytology method. Repeatedly negative gastric cytology supports a diagnosis of benign gastric ulcer.

DISCUSSION

The indications for gastric washings are listed in Table 4. The single instance of
Rinaldo, Marvel, Fine and Watson

Indications for Gastric Cytology

1. All gastric ulcers in the antrum, on the greater curvature, or in the fundus of the stomach.
2. Any other lesion in any part of the stomach if malignancy is a consideration.
3. Confirmatory histologic diagnosis of malignancy to avoid operation where chemotherapy or radiotherapy are the only modes of therapy considered.

Table 4

gastric carcinoma diagnosed as a benign ulcer by conventional means and as a malignant lesion by cytologic study was in the gastric antrum. Seven of the 9 cases of benign gastric ulcer diagnosed incorrectly by x-ray were in the gastric antrum; 1 was on the greater curvature and 1 was on the lesser curvature in the body of the stomach. These figures assume even greater importance if one considers that of a total of 73 benign ulcers 40 were on the lesser curvature in the body of the stomach, 30 were antral ulcers, and only 3 were on the greater curvature. It is evident that the radiologist makes most of his errors on antral, greater curvature and fundic lesions.

The endoscopist has difficulties in the same anatomical areas. Of the two gastric malignancies diagnosed incorrectly one was in the fundus and the other in the distal 2/3 of the stomach. Two of the three benign ulcers mistaken for tumor by the endoscopist were on the lesser curvature and one was in the antrum. In addition the endoscopist often does not see lesions in these areas. This is shown by the fact that 7 of 13 unsatisfactory gastroscopic examinations were in patients with antral lesions, 1 with a greater curvature and 5 with lesser curvature lesions. Because antral ulcers are so difficult to see adequately, gastroscopy is often not attempted in the presence of ulcer in this location. However, gastroscopy should be performed whenever feasible in cases where the nature of the ulceration is in doubt.

In summary then, the conventional techniques are seldom wrong in the diagnosis of lesser curvature ulcers in the body of the stomach. In this situation routine gastric cytology is not necessary.

Gastric cytology assumes special importance in the presence of gastric ulcers in the antrum, on the greater curvature and in the fundus.

SUMMARY

Exfoliative cytology study of gastric washings was performed in patients with gastric ulcer and gastric carcinoma. The indications for gastric cytology in the patients with gastric ulcer were noted and are summarized in Table 4. It is of utmost importance that all diagnostic means are utilized in attempting to solve the question — "benign or malignant"?

REFERENCES