Evaluation of Villous Patterns in Tumors of the Colon and Rectum*

Louis R. Ferraro, M.D., Stuart T. Ross, M.D.

From the Departments of Pathology and Surgery, Nassau Hospital, Mineola, New York

This investigation of villous patterns of epithelial neoplasms of the colon and rectum, including adenomas, villous adenomas, papillary carcinomas and some adenocarcinomas, was stimulated by the discrepancy in evaluation of their specific histologic structure, which the authors termed the "riddle of villous patterns of tumors of the colon and rectum." Numerous investigators have shown that villous adenomas frequently undergo adenocarcinomatous transformation, invade the bowel wall and metastasize to regional lymph nodes and distant organs. This type of neoplasm is composed of well-differentiated epithelial cells as well as infiltrating anaplastic structures. Owing to their villous structure, a guarded prognosis is usually assigned to even benign villous tumors. Some investigators attach little significance to similar patterns observed in pedunculated or sessile adenomas.

Considerable confusion even exists regarding terminology, and terms used to designate this more or less general type of neoplasm are villous adenoma, papillary adenoma, villoma, villopapillary carcinoma and adenoma destruens.

All surgical specimens of tumors of the colon and rectum, encountered at Nassau Hospital from 1958 to 1963 inclusive, were reviewed. All "pure adenocarcinomas" were excluded, but particular attention was directed to all other tumors that revealed villous structure. During this period of six years, 595 tumors were gathered and, "in the vast majority of cases," the entire tumor was available for study. However, a small number of biopsy specimens were included if they demonstrated specific histologic features sufficient for accurate diagnosis. Multiple microscopic sections were prepared and, when necessary, special stains were utilized. Of 595 tumors, 383 (64%) were malignant and 212 (36%) were benign.

Evaluation

To evaluate villous patterns, a modified classification and diagnostic criteria were established.

Adenoma: The authors were impressed by the frequency with which focal villous features were intermingled with the characteristic adenomatous pattern. To investigate this finding more thoroughly, 100 consecutive adenomas were reviewed carefully and were classified according to presence or absence of villous patterns. The adenomas were divided into pure and mixed types.

1. Pure Adenoma. Usually this is a pedunculated, rounded, smooth, reddish-brown tumor of the consistency of rubber. Microscopically, there is a proliferation of well-differentiated hyperchromatic glands of various sizes. Occasionally, focal carcinoma (in situ atypia) is observed and, rarely, a focal area is transformed into infiltrating adenocarcinoma. The tumor originates as a small, sessile adenoma and later it develops a stalk by incorporating a "stretched-out" portion of normal adjacent mucosa and muscularis mucosae. It may possess a single stalk, or the main stalk may divide into branches, producing a multilobulated tumor, while still maintaining the essential pattern of a pure type of adenomatous proliferation.

2. Mixed Adenoma. This type also is usually pedunculated and predominantly adenomatous but,
in addition, it contains focal areas of distinctly villous patterns, originating from the base of the mucosa or from the base of some of the branching areas. Excluded from this category must be all adenomas which present minor papillations extending outward from the periphery of the tumor. However, the villous structures may be ultimately interwoven with the adenomatous pattern, but occasionally they occur in focal areas.

In their review of the 100 consecutive adenomas, 55 per cent were classified as the pure variety and 45 per cent, showing both adenomatous and villous patterns, were classified as the mixed type. Further analysis revealed that when compared with the pure adenoma, there were a number of distinctive features associated with the mixed type.

The mixed type occurred in large tumors in patients of more advanced age and were associated with cellular atypia more frequently than the pure adenoma. The average age of patients with mixed adenomas was 59.9 years and that of patients with the pure type was 54.3 years (Table 1).

Because both adenomatous and villous patterns were observed in the same tumor, it was believed that these patterns were intimately related, and perhaps formed an integral part of the entire concept of adenomas. By study of histologic sections of one multilobulated adenoma of the sigmoid flexure, a small sessile adenoma was discovered in one of the branched stalks, while there was a typical villous pattern on the opposite side of the same stalk. In this same patient, simultaneously, there was a typical villous adenoma of the transverse colon, as well as a mixed adenoma of the sigmoid flexure (Fig. 1).

The most common tumor with pronounced villous patterns is the villous adenoma, either in its benign or malignant form. All tumors had a variable amount of glandular hyperplasia. Often the villous adenoma is a sessile “spreading” tumor with a fine granular or papillary appearance on its surface, which also manifests some areas of nodularity. It is situated superficially and its consistency is soft. Rarely it may be pedunculated (Fig. 2) and small biopsies from such a tumor may be difficult to interpret.

Of the entire series of patients, 39 (6%) had villous adenomas and of these, 21 (53%, or 3.5% of the entire series) had benign tumors; 18 (47%, or 3% of the entire series) had tumors that were associated with adenocarcinomatous transformation.

There were 21 men whose average age was 64.4 years, and the ages of 18 women averaged 59.8 years. The average age of all patients with villous adenomas was 62.3 years.

Frequently these lesions undergo adenocarcinomatous change with infiltration of the bowel wall and metastasis to regional lymph nodes and distant organs. Recurrence after local removal or local therapy is not uncommon, and association of this tumor with other neoplasms, either benign or malignant, in a separate area of the large bowel, also occurs frequently (Table 2).

At this point the authors repeat that, in medical literature, the terms papillary adenoma, villous adenoma, and villous papilloma are used, more or less, interchangeably. The objective of this repetition is to establish their conviction that certain gross and microscopic differences can be distinguished in this “conglomerate group”

<table>
<thead>
<tr>
<th>Age</th>
<th>Pure Type (55 Cases)</th>
<th>Mixed Type (45 Cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 to 40</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>41 to 50</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>51 to 60</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>61 to 70</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>71 to 80</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

* Diagnosis: pure type, 55 per cent; mixed type, 45 per cent.