

Limitations of Biopsy in Preoperative Assessment of Villous Papilloma*

ERIC W. TAYLOR, F.R.C.S., HENRY THOMPSON, F.R.C.PATH.,
GEOFFREY D. OATES, F.R.C.S., NORMAN J. DORRICOFF, CH.M., F.R.C.S.,
JOHN ALEXANDER-WILLIAMS, CH.M., M.D., F.R.C.S., MICHAEL R. B. KEIGHLEY, M.S., F.R.C.S.

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*From The General Hospital,
Birmingham, England*

Between January 1975 and December 1979, 58 patients were diagnosed as having villous papilloma of the large bowel. A retrospective review was performed and all histologic specimens were re-examined by one gastrointestinal histopathologist (H.T.). On review, 19 (23 per cent) lesions were reclassified as not being villous papilloma. Results of preoperative biopsy examinations were misleading in 13 of the 29 patients who had biopsy procedures reported by any member of the histopathology department. When the assessment of malignancy in the initial biopsy specimens was compared with that of the final histologic diagnosis, there were ten (34 per cent) false-negative and three (10 per cent) false-positive reports. Even when the excised specimens were reviewed for malignancy by a specialist gastrointestinal histopathologist, there were seven (24 per cent) false-negative results. [Key words: Biopsy, preoperative; Carcinoma, colonic; Colon, carcinoma; Papilloma, villous]

COLONIC POLYPS are now recognized as the principal precursors of colorectal carcinoma.¹⁻³ Not all polyps are premalignant and the malignant potential of the villous papilloma has been the subject of debate since this tumor was first described.⁴ The incidence of malignancy is reported to vary from 8.5 to 75 per cent.^{5,6} Such disparity may indicate a lack of uniformity among the histologic criteria used for diagnosis. Morson and Dawson⁷ have clarified the criteria that allow them to distinguish between adenomatous polyps, tubulovillous polyps, and villous papillomas. However, it is not possible to have all specimens assessed by histopathologists of such experience. We have reviewed our experience with villous papillomas of the large bowel, paying particular attention to the reliability of routine histologic reporting, and the in-

fluence that the preoperative biopsy might have upon subsequent operations.

Materials and Methods

Between January 1975 and December 1979, 58 patients with lesions in the colon or rectum, originally reported as villous papillomas, were treated at the General Hospital, Birmingham. The histologic reports were issued by histopathologists of all grades. All clinical notes have been reviewed and the histologic specimens have been re-examined by one of us (H.T.) with a special interest in gastrointestinal pathology. January 1975 was chosen for the start of this study since it was then that both colonoscopic and double-contrast barium-enema examinations were being used extensively as the primary method of assessing patients with colorectal disease in this hospital.

Results

Re-examination of the original histologic slides showed that only 39 (67 per cent) of the 58 specimens fulfilled the strict criteria for classification as villous papillomas. Ten (17 per cent) lesions were reclassified as metaplastic polyps, two (3 per cent) as adenomatous polyps, and seven (12 per cent) as tubulovillous polyps. These were all excluded from further study. Of these 39 patients with villous papillomas, 22 (56 per cent) were men. 17 were women, and the mean age at presentation was 65.8 years.

In four patients, the papilloma was an incidental finding. Nineteen (49 per cent) complained of rectal bleeding, and 17 (44 per cent) presented with mucous discharge or diarrhea. No patient presented with se-

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Address reprint requests to Mr. Keighley: The General Hospital, Steelhouse Lane, Birmingham B4 6NH, England.

TABLE 1. Preoperative Biopsy Reports (29 Cases)*

	Original Report		Report by Specialist Histologist	
	Number	Per Cent	Number	Per Cent
Benign	15	52	20	69
<i>In situ</i> carcinoma	12	41	8	28
Invasive carcinoma	2	7	1	3

* Six (21 per cent) reports were changed on review.

vere potassium and water deficiencies. Four (10 per cent) tumors were found to be above the sigmoid colon, 28 were within 10 cm of the anus, and 35 (90 per cent) were within range of the 25-cm sigmoidoscope. Eighteen of the 39 lesions were of the diffuse "carpet-like" variety.

Surgical management included endoanal resection using a bivalve proctoscope in 13 (33 per cent); posterior transsphincteric approach^s in four (10 per cent); transabdominal resection of the upper rectum or sigmoid colon in five (13 per cent); and abdominoperineal resection in three (8 per cent). Twelve (31 per cent) patients had lesions removed via sigmoidoscope or colonoscope. Two patients were referred for radiotherapy on the grounds of age and infirmity, but both died shortly after therapy due to cardiovascular or respiratory diseases.

Twenty-nine of the 39 patients underwent tumor biopsy procedures before excision. Table 1 compares the original histologic reports of the biopsy specimens with the reports (on the same histologic slides) by the specialist gastrointestinal histopathologist; six reports were changed on review. Thirty-seven patients had lesions excised and a comparison of the original and review histologic reports on these specimens is shown in Table 2; eight reports were changed on review.

TABLE 2. Excised Specimen Reports (37 Cases)*

	Original Report		Report by Specialist Histologist	
	Number	Per Cent	Number	Per Cent
Benign	13	35	20	54
<i>In situ</i> carcinoma	19	51	13	35
Invasive carcinoma	5	14	4	11

* Eight (22 per cent) reports were changed on review.

Comparison of the histology of the preoperative biopsy specimen with that of the excised specimen, when both were reported by any member of the histopathology department, showed that there were three (10 per cent) false-positive reports (where the biopsy tissue showed a higher degree of malignancy than was found in the excised specimen) and ten (34 per cent) false-negative reports (where the lesion was thought on biopsy to be less malignant than was found in the excised specimen).

The false-positive reports were from two patients whose preoperative biopsy specimens showed "*in situ* carcinoma" and the excised specimens were reported as benign. The preoperative biopsy specimen in the third patient was reported "highly suggestive of invasive carcinoma" and therefore an anterior resection was performed, but the excised specimen showed only "*in situ* carcinoma." Comparison between preoperative biopsy and excised specimen histology, assessed by a specialist gastroenterologic histopathologist, revealed no false-positive report but there were still seven (24 per cent) false-negative biopsy reports. Details of the false-negative biopsies as originally reported and those remaining on review are shown in Table 3.

The mean follow up in this series was 23.5 months with a range from 4 to 57 months. Two patients (five per cent) have been lost to follow up and eight patients (20 per cent) have died. No patient died as the result of colonic carcinoma arising in the villous papilloma. There was one early postoperative death—a patient who died of pseudomembranous colitis four weeks after a postero-transsphincteric approach. Of the remaining seven later deaths, two patients died of bronchopneumonia, one of pancreatic carcinoma, and one from a cerebrovascular accident. In three patients, the cause of death is not known for certain, but these patients were free from recurrence when seen shortly before their deaths.

Three patients had recurrences of their villous papillomas. Two had their recurrences excised sigmoidoscopically and the third patient has recently undergone an abdominoperineal excision of the rectum for the fifth recurrence.

Discussion

Until the introduction of colonoscopy, villous papillomas were thought to be rare above the sigmoid colon. Recently, Shinya and Wolff⁹ have reported a series of 7,000 polyps removed colonoscopically. Of these, 519 (7.4 per cent) were villous papillomas and 50 per cent of them were found above the sigmoid colon. However, this series of patients referred speci-

fically for colonoscopy is unlikely to have included patients with large rectal lesions, the more common presentation of this tumor. Although colonoscopy was available in our hospital for the investigation of polyps discovered on double-contrast, barium-enema examinations during the period of this study, only four (10 per cent) of the papillomas were found to be above the sigmoid colon.

The incidence of malignancy in colorectal polyps has been shown to be related to their size.⁹ Villous papillomas are thought to be more malignant than adenomatous polyps, even when of equal size.³ A review of the literature shows that the reported incidence of malignancy is extremely varied. The wide disparity of malignancy rates would seem to indicate that different criteria are being applied in assessing the histology. Many series include tumors collected and reported upon many years ago and not reviewed in the light of new experience or better definition of criteria for the diagnosis of malignancy. In our series, the 58 tumors originally diagnosed as villous papilloma were seen during the last five years. Each preoperative biopsy specimen and excised specimen was seen and reported upon by one of the group of histopathologists varying in experience from a Consultant to that of a Junior Registrar. During the period of this study, there were 22 histopathologists in these grades on rotation through the histopathology department. While the junior members of the department were considered sufficiently experienced to report on the histopathology specimens, without a policy of specialization, any one pathologist is likely to have seen no more than four or five tumors during the period of these studies. It is therefore understandable that the accuracy of assessment will be greater when all specimens are examined at the same time by one observer using standard criteria.

A definitive histologic assessment based on preoperative biopsy of villous papillomas is notoriously unreliable. False-negative biopsy rates are reported in between six and 80 per cent (Table 4). In our series, 44 per cent of the biopsy reports were

TABLE 4. *False-negative Biopsy Reports: Review of Literature*

Reference	Number of Cases	False-Negative (per cent)
Welch and Dockerty, 1958 ¹⁰	82	23
Southwood, 1962 ¹¹	180	80
Ramirez <i>et al.</i> , 1965 ¹²	205	6
Olson and Davis, 1969 ¹³	102	23
Quan and Castro, 1971 ¹⁴	215	52
Evans <i>et al.</i> , 1972 ¹⁵	78	27
Orringer and Eggleston, 1972 ¹⁶	65	31
Takolander, 1977 ¹⁷	213	25

misleading when compared with the report of the excised specimen. Thirty-four per cent were false-negative biopsy reports which is not a serious error if the whole tumor is removed subsequently and is in keeping with other reports. More disturbing and potentially dangerous is the 10 per cent false-positive incidence. We have been unable to trace any other reported series in which there has been a false-positive biopsy report. These potentially serious errors must be attributed to inexperience as there were no false-positive reports when these same slides were reported on by a specialist histopathologist.

The incidence of invasive malignancy in villous papillomas is perhaps the most important assessment of all. Invasive malignancy may only be revealed when there is difficulty in lifting the tumor off the submucosa by submucosal infiltration.¹⁸ In this series, invasive malignant change was reported in five (14 per cent) of excised specimens and in four (11 per cent) when the histology was reported by one histopathologist.

We conclude that villous papillomas are not common above the sigmoid colon. Assessment of malignant changes in preoperative biopsy specimen is difficult and unreliable even when reported by an experienced gastrointestinal histopathologist. We found the incidence of invasive carcinoma lower than is generally reported. We believe that the type of resection planned for patients with these tumors should not be based upon the preoperative report but on the clinical impression of fixity in the rectum and we would favor a conservative approach by submucosal excision in the first instance.

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TABLE 3. *False-negative Biopsy Details*

Biopsy Report	Excised Specimen Report	Original Reports	Reports by Specialist Histologist
Benign	<i>In situ</i>		
	carcinoma	6	4
Benign	Invasive		
	carcinoma	2	1
<i>In situ</i>	Invasive		
carcinoma	carcinoma	2	2

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