Adenomatous residue in cancerous papilla of Vater

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SUMMARY Surgical specimens of carcinoma in the papilla of Vater were studied histologically. Adenomatous residue which suggested that the carcinoma was derived from a pre-existing adenoma was found in 18 cases (81.8%) out of 22. The histological transition of adenoma into carcinoma was also frequently seen.

The malignant potentialities of adenomas in the ampulla of Vater have been noted,1-3 although benign neoplasms of the extrahepatic bile ducts are rare.4 At least in a small number of cases adenoma of the ampulla of Vater may be related to carcinoma. Most carcinomas in the large intestine arise from adenomatous polyps, though this is not so often the case with gastric carcinomas. The present study aims to assess how frequently carcinomas of the ampulla of Vater arise from adenoma by histological examination of adenomatous residue in the cancerous ampulla of Vater.

Methods

The files of the Department of Surgery of the Ohgaki Municipal Hospital were searched for carcinoma of the ampulla of Vater dating back to 1970. A total of 22 cases of pancreatoduodenectomy was found. In each case two to 10 routine histological sections stained by haematoxylin and eosin were available.

Adenomatous residue was histologically studied in the surgical specimens of the cancerous ampulla of Vater.

Results

Histopathological studies were carried out on the surgical specimens of the cancerous ampulla of Vater obtained from 15 male patients and seven female. The age of the patients ranged from 39 years of age to 71 years and was 61.4 ± 7.9 years on average (61.4 ± 8.1 in males and 61.4 ± 8.1 in females). All the patients except one were 50 or more years old (Table).

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Age (yr) and sex</th>
<th>Size of tumour (mm)</th>
<th>Approximate area ratio of adenomatous residue in tumour mass (%)</th>
<th>Infiltrating growth of carcinoma</th>
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Out of 22 cases 19 showed a polypoid tumour obstructing the papilla of Vater and the remaining three cases showed an ulcerated cancer. The size of tumours ranged from 7 to 35 mm at the largest diameter.

Adenocarcinoma was found in all the 22 cases and infiltration of cancer cells into subepithelial tissue was noted in all except one: this was cancer in adenoma. The histological types of cancers were tubular and/or papillotubular adenocarcinoma in most cases, but some cases were mucinous or poorly differentiated carcinoma. No squamous cell carcinoma was found.

Although it is not always easy to differentiate histologically adenomatous residue from frank carcinoma, adenomatous residue was identified accord-
ing to the following features. Adenoma was tubular type or papillary. Adenomatous cells had a nucleus that was intermediate in size between normal and carcinomatous nuclei. Epithelial pseudostratification was generally mild in adenoma. The glandular structure was usually simple and there was no intraglandular budding and bridging in adenoma. Individual glands were distinctly separated from each other by broad stroma (Figs. 1 and 2). The amount of mucin in the epithelial cells was varied, but it was often larger in adenoma than in adenocarcinoma.

Judging by the above criteria of adenoma, obvious residue of an adenomatous component was detected in 18 (81.8%) cases out of 22. Only four cases had no trace of adenomatous component and showed severely infiltrating growth of cancer cells.

Approximate area-ratio of adenomatous residue in a tumour mass was estimated on the histological

Fig. 10 A residue of well-differentiated tubular adenoma in a case of infiltrating carcinoma of the papilla of Vater. Epithelial cells have abundant mucin and the epithelial nuclei are basally situated. H and E, ×200.

Fig. 2 An adenomatous residue in a case of infiltrating carcinoma of the papilla of Vater. Epithelial pseudostratification of moderate degree is seen and mucin content in the epithelial cells diminished. Broad stroma distinctly separates individual glands. H and E, ×200.
sections (Table), though accurate differentiation of adenomatous residue from cancer was not always possible because of frequent transition of adenoma into adenocarcinoma (Fig. 3). The area-ratio of adenomatous residue in a tumour mass varied greatly among the cases from 0 to 80% and it was 10% or less in more than half of the cases.

**Discussion**

In the present series adenomatous residue was found in strikingly high frequency—that is, 81.8% (18 out of 22 cases). This figure was considerably higher than the incidence of adenomatous residue reported in the colorectal carcinoma. Most carcinomas in the colon and rectum have been considered to arise from adenoma. The reported incidences of adenomatous residue in colorectal carcinoma were 32.3%, 14%, and 0.9%. The incidence of the adenomatous residue might depend in part on the criteria of adenomatous epithelium and the number of histological sections examined, but it might mainly depend on the stage of tumour development. Most colorectal carcinoma of less than 20 mm in diameter showed features of carcinoma in adenoma, while those of more than 50 mm in diameter rarely had adenomatous residue.

In the present study tumours of the papilla of Vater ranged in size between 7 and 35 mm in diameter and their average size was 21.5 ± 7.9 mm. Most of them were considerably smaller in size than most of the colorectal carcinoma encountered daily in surgery. A narrow orifice in the papilla of Vater in comparison with a wide lumen in the colon and rectum might easily be obstructed by a small mass of neoplasm. Early detection and resection of carcinoma in the papilla of Vater probably brought the high incidence of adenomatous residue within a tumour mass. The extremely high incidence of adenomatous residue suggested that most carcinomas in the papilla of Vater arise from adenoma.

Baggenstoss found 18 cases of adenomatous hyperplasia in 100 consecutive necropsies. Of these 18 cases, 14 were found in 45 cases in which microscopic examination was made. The mean age of these 18 patients was 51 years. He reported also 25 cases of polyp of the major papilla recorded at the Mayo Foundation. These polyps varied from 2 to 5 mm in diameter and the mean age of the patients in this group was 55.1 years. Reviewing a total 30 cases of benign epithelial tumours of the ampullary area in the literature, Anderson and Gregor reported that the average age of the patients at the time of diagnosis was 58.2 years and that the average diameter of the tumours was approximately 1 cm.

In the present series of carcinoma in the papilla of Vater, the average age of the patients was 61.4 ± 7.9 years and the average size of tumours was 21.5 ± 7.9 mm at the maximum diameter. Where the average age of patients was concerned, the patients having carcinoma in the present series were 10.4 years older than those having hyperplasia, 6.3 years older than those having polyps in Baggenstoss’s report, and 3.2 years older than those having the benign epithelial...
tumours of Anderson and Gregor. The average size of tumours in each of the above-mentioned groups also increased parallel to the increase of the average age of the patients.

In the colorectal patients the average age of those with invasive carcinoma was 10 years older than those with grade II polyp (hyperplasia), 8·3 years older than those with grade III polyp (adenoma), 5·2 years older than those with grade IV polyp (adenoma), and 0·5 years older than those with grade V polyp (precancerous adenoma). The size of colorectal polyps also gradually increased with advance of the histological grade.

In the digestive system most carcinomas which are frequent in older people arise from pre-existing benign lesions. Most colorectal carcinomas arise from adenoma. In the pancreas duct hyperplasia, which mainly results from necrotising pancreatitis, is a possible precursor of pancreatic carcinoma. Some gastric polyps frequently change into carcinoma. Most hepatic carcinomas originate from hyperplastic nodules in liver cirrhosis. In the papilla of Vater adenoma might be a potent precursor of carcinoma.

References

7 Swinton NW, Warren S. Polyps of the colon and rectum and their relation to malignancy. JAMA 1939; 113:1927–33.
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doi: 10.1136/gut.22.12.1031

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