Human Pancreatic Polypeptide (HPP) Immunoreactivity in an Infiltrating Endocrine Tumour of the Papilla of Vater with Unusual Morphology *

Report of a Case

Otto Ljungberg¹, Gunnar Järnerot², Peter Rolny², and Gunnar Wickbom³

¹ Department of Pathology, University of Lund, General Hospital, Malmö, Sweden
² Division of Gastroenterology, Department of Internal Medicine, Central County Hospital, Örebro, Sweden
³ Department of Surgery, Central County Hospital, Örebro, Sweden

Summary. Histological, histochemical and clinical features of an endocrine duodenal tumour situated in the papillary region were studied. The tumour had a remarkable mixed histological growth pattern, consisting of epithelial glandular structures which showed a gradual transition into a spindle-cell tumour, resembling a neurogenic tumour. The neoplasm was considered malignant since it had infiltrated into the muscular layer of the duodenal wall.

The tumour was non-argentaffin and non-argyrophil. No serotonin could be demonstrated histochemically. Immunoreactive pancreatic polypeptide (HPP) was detected by indirect immunofluorescence in the majority of tumour cells of the epithelial glandular structures, whereas areas with a spindle-cell pattern were almost unreactive to the HPP-antiserum. No reaction was found with antibodies against gastrin, insulin, glucagon, vasoactive intestinal polypeptide or somatostatin.

The patient had no endocrine symptoms that could be ascribed to the production of HPP by the neoplasm. Twenty-four months postoperatively, the patient’s serum HPP concentration had begun to rise, suggesting recurrence of the tumour.

Key words: Duodenal endocrine tumour – Papilla of Vater – HPP-immunoreactive tumour cells – Neurogenic component

Introduction

Endocrine tumours of the duodenum, most often occurring in its upper part or in the region of the papilla of Vater, are generally included within the

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Offprint requests to: Dr. Otto Ljungberg, Department of Pathology, University of Lund, General Hospital, S-214 01 Malmö, Sweden
group of carcinoids which are referred to as carcinoids of the foregut type (Williams and Sandler 1963). Weichert et al. (1971) have described a pattern in the duodenal endocrine tumours which they have called "carcinoid-islets cell type", claiming that these tumours have morphological and functional features both of carcinoids and pancreatic islet cell tumours. Although they usually do not have the features associated with the production of serotonin, there seems to be a functional relationship with respect to the production of certain polypeptide hormones.

Human pancreatic polypeptide (HPP) is a recently identified pancreatic hormone (Floyd et al. 1975), produced by endocrine cells which occur both in the islets and the exocrine pancreatic parenchyma (Larsson et al. 1976). This peptide has so far been found in a large proportion of endocrine tumours of the pancreas and in a fairly large proportion of rectal carcinoids (Heitz et al. 1976; Alumets et al. 1981). It therefore seemed appropriate to report here the occurrence of immunoreactive HPP cells in a duodenal endocrine tumour which lends further support to the assumption of a biological relationship with endocrine tumours of other parts of the gastrointestinal tract as well as of the pancreas.

Case Report

A 50-year-old obese man was admitted to the hospital because of repeated gastrointestinal bleeding. He had had a history of previous alcohol abuse but had stopped drinking 8 years prior to admission. A mild diabetes had been diagnosed a year earlier; he was on oral hypoglycemic agents. He also had a moderate arterial hypertension.

During the last 4 years, he had suffered from recurrent melenas, requiring massive blood transfusions on several occasions. The source of the bleeding had not been found, despite repeated investigations including X-ray of the upper gastrointestinal tract, gastroscopy, colonoscopy and coeliac artery angiography which had been carried out at another hospital. The patient was referred to our hospital for further investigation. On admission, he had no gastrointestinal complaints and was feeling well. Except for the mild diabetes, he presented no signs of endocrinopathy. Physical examination as well as routine laboratory investigations were normal. Analyses concerning blood levels of gastrointestinal hormones were not carried out at this point.

A benign tubular adenoma was removed from rectum during proctoscopy, which was otherwise normal. Endoscopy of the upper gastrointestinal tract revealed two erosions in the antral mucosa. A tumour, 1 x 2 cm, was disclosed in the region of the papilla of Vater. It was oval in shape, appeared well demarcated and showed an irregular, linear ulceration on the top. The papillary orifice could not be visualized. Repeated endoscopic biopsies failed to show any tumorous tissue.

At operation the tumour was found to enclose the papilla of Vater. Peroperative pancreatography showed a normal pancreatic duct. The bile duct could not be visualized, however laboratory tests disclosed no signs of biliary obstruction. The tumour, including the papilla, was excised and the bile duct and the pancreatic duct were resutured to the duodenum.

The postoperative course was uneventful. During the following 23 months the patient was subjected to repeated examinations including endoscopy, ERCP, hepatic scintigraphy and angiography. Laboratory tests, including plasma assays for gastrin, CCK, vasoactive intestinal polypeptide, HPP, insulin, C peptide, calcitonin, cortisol, serotonin and determination of urinary excretion of 5-hydroxyindoleacetic acid were all within normal limits. However, at a recent check-up (November 1980), 24 months after the operation, the patient's serum HPP values were found to have increased (highest value being 2.2 ng/ml) indicating a recurrence of the tumour. So far, the patient has remained well and there have been no signs of gastrointestinal bleeding.

1 Serum HPP was assayed by Dr. G. Lundqvist, Akademiska Sjukhuset, Uppsala, Sweden (Normal value = <0.04 ng/ml)