

Ampullary carcinoid tumour presenting with extrahepatic biliary obstruction

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Abstract

Carcinoid tumours are slow growing tumours, derived from enterochromaffin cells located in the crypts of Lieberkühn, which is part of neuroendocrine system. A 36-year-old female patient presented in surgical clinic with complaints of progressively increasing yellowish discolouration of her eyes and pruritis for 6 months. She was deeply jaundiced with a soft and non-tender abdomen. Diagnostic work-up revealed obstructive jaundice secondary to ampullary growth, while computed tomography revealed a small intraluminal lower common bile duct mass. Endoscopic ultrasound showed thickened duodenum at ampulla of Vater. Pancreaticoduodenectomy (Whipple's procedure) with pancreaticojejunostomy, hepaticojejunostomy and gastrojejunostomy was done. Pathological examination of the resected specimen revealed carcinoid tumour. Postoperative course of patient was unremarkable and she is doing well after surgery.

Keywords: Ampulla of vater, Extrahepatic biliary obstruction, Carcinoid tumour, Pancreaticoduodenectomy, Endoscopic ultrasound.

Introduction

Carcinoid tumours are slow-growing tumours, derived from enterochromaffin (EC) cells located in the crypts of Lieberkühn, a part of neuroendocrine system. Gastrointestinal system (70%) is most commonly involved, followed by pulmonary tract (25%).¹ Various bioactive amines and peptides are secreted by these tumours, including serotonin, 5-hydroxytryptophan, calcitonin, somatostatin, glucagon etc. Among these, the most important tumour marker is the glycoprotein chromogranin A (CgA),² but histopathological diagnosis is the gold standard.

Less than 2% of all gastrointestinal carcinoids are of duodenal variety. The annual incidence is about 0.07/100,000.²

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We present a case of primary duodenal carcinoid.

Case Report

A 36-year-old unmarried woman, with no known comorbidities and addiction, presented in emergency department in May 2012 with complaints of progressively increasing yellowish discolouration of her eyes and skin, with associated anorexia and undocumented weight loss for 6 months. She developed itching during this period that had caused scratch marks. The patient denied any history of abdominal pain, fever, epigastric discomfort, clay-coloured stools, dark urine, hematemesis and melena. Review of systems was unremarkable. Family history for malignancies was insignificant.

On physical examination, her vital signs were normal. Skin and sclera was icteric. Abdomen was soft and non-tender with slight epigastric fullness. Liver was palpable 2cm below right costal margin that was non-tender, with smooth surfaces and well defined margins. Lymph nodes were not palpable elsewhere in her body. Digital rectal examination and examination of central nervous, cardiovascular, respiratory and musculoskeletal systems was unremarkable.

Her laboratory results showed normal haemogram and serum bilirubin of 10.1mg%, alkaline phosphatase of 1606 U/l and serum amylase of 78 IU/L.

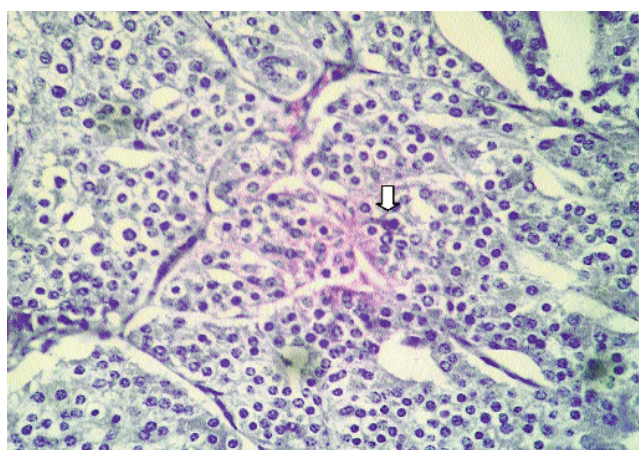


Figure-1: Large to medium sized desmoplastic tumour cells with hyperchromatic nuclei. (Arrow) Occasional mitosis and microcalcification seen.

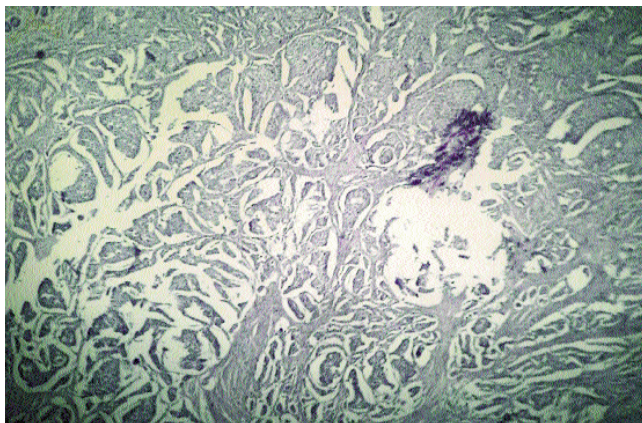


Figure-2: Tumour-invaded mucosa, sub-mucosa and muscularispropria.

Transabdominal ultrasound showed distended gall bladder with dilated intra- and extra-hepatic channels. Computed Tomography (CT) of abdomen and pelvis revealed intra and extra-hepatic biliary channel dilatation, a rounded soft tissue density lesion in the lumen of common bile duct (CBD) with no discrete mass at the ampullary area. Her endoscopic retrograde cholangiopancreatography (ERCP) showed grossly dilated CBD with no discrete mass at the peri-ampullary area. Endoscopic ultrasound detected heterogeneous pancreatic head and thickened duodenum at ampulla of Vater. Utilising endoscopic ultrasound, biopsies were taken from pancreatic head and CBD which were negative for any malignancy.

After optimisation, she was scheduled for operative exploration that revealed a 2 x 2 cm growth at the peri-ampullary region. The CBD and pancreatic duct were dilated. Rest of the pancreas appeared normal. No evidence of nodal and hepatic involvement, ascites or peritoneal seedlings was found. Frozen section of the resected growth showed tumour cells. We decided to proceed with pancreaticoduodenectomy with hepaticojejunostomy, pancreaticojejunostomy and gastrojejunostomy (Whipple procedure) with cholecystectomy, hepaticojejunostomy stent placement. Feeding jejunostomy was accomplished. She was shifted to surgical intensive care unit (SICU) on intravenous fluids, antibiotics and analgesia. Feeding started on 1st post-operative day through feeding jejunostomy. Later, she was switched to oral feed on 5th post-operative day.

Specimen was sent to pathology. A diagnosis of well-differentiated neuroendocrine EC cell (carcinoid) tumour was established. (Figures-1 and 2)

Overall, the patient tolerated the procedure well and on

10th post-operative day, she was discharged from hospital. Stent was taken out after 3 weeks. Her follow-up investigations showed normal plasma chromogranin A (CgA) and urinary 5-hydroxyindoleacetic acid (5-HIAA) levels. Currently, two years after surgery, she is asymptomatic and doing well.

Discussion

Gastrointestinal carcinoids are most common (~50%) of all neuroendocrine tumours.³ Approximately 120 cases have been reported in literature.⁴ Carcinoid tumour from small bowel autopsy of two patients was described in 1888. The term "karzinoidetumoren" was used in 1907 to distinguish carcinoids from carcinomas, and a study demonstrated the amine precursor uptake and decarboxylation properties of EC cells in 1928.⁵

The World Health Organisation (WHO) classification, published in 2000, grouped neuroendocrine tumours (NETs) under three categories; (1) well-differentiated endocrine tumours (carcinoids); (2) well-differentiated endocrine carcinomas (malignant carcinoids); and (3) poorly-differentiated endocrine carcinomas (small cell carcinomas).⁶ Our patient had well-differentiated endocrine tumour, according to this classification system.

Carcinoid tumours are divided into foregut, midgut and hindgut carcinoids, based on their embryological origin. This distinction is necessary, owing to different clinical course and immunohistochemical (IHC) characteristics of these tumours from different regions of body. Most commonly, these are found in the small intestine (39.3%), colon and rectum (33.9%) and stomach (5.9%), whereas appendix alone gets 17.8% of all tumours.⁷

Overall, 0.05% of all carcinoids are ampullary in origin.⁸ They are usually found in submucosal layers of duodenal papilla. Peri-ampullary carcinoids are distinct from other peri-ampullary growths in having lower mean age of presentation (5th-6th decade), longer clinical course before diagnosis (>3 months), and associated neurofibromatosis (>25%).³ However, in our patient, age was less than 50 years (36 years); duration between onset of symptoms and diagnosis was more than 3 months (6 months); and no cutaneous neurofibromas were there. She presented with obstructive jaundice which is a common (>60%)³ presentation in this disease and weight-loss (3.7%). Other features include abdominal discomfort (24.6%) and acute pancreatitis (6.0%).⁶ Our patient did not exhibit any features suggestive of carcinoid syndrome (flushing, diarrhoea, etc.) which is consistent with the reports of rarity of carcinoid syndrome in these tumours (<3%).³

Ampullary carcinoids show a tendency to invade tissues

under normal epithelium. This explains the limitation of endoscopic examination in obtaining accurate biopsy specimen and subsequently lower pre-operative diagnostic rate (14%).⁸

Duodenoscopy with ERCP is the diagnostic modality of choice. ERCP is an operator-dependent procedure and one can miss the target tissue for biopsy. Often deeper biopsies are required to establish histopathological diagnosis.⁶ This limitation of ERCP was seen in our patient.

Elevated plasma CgA (sensitivity 62.9%, specificity 98.4%), serotonin, or 24-hour urinary 5-HIAA (sensitivity 84%, specificity 88%-100%) helps in biochemical evaluation.⁹ However, we could not obtain these levels pre-operatively as clinical features and diagnostic work-up along with rarity of the disease were not suggestive of carcinoid tumour in this case. Post-operative increased CgA levels indicate the survival outcome and emphasise the importance of following this marker over time in these patients after primary resection of their tumour as it may indicate the need for more aggressive treatment. Octreo Scan is a sensitive diagnostic modality to detect endocrine gastrointestinal tumours and their metastasis as over 80% of all carcinoid tumour cells have somatostatin receptors.⁵ CT scan, magnetic resonance imaging (MRI) and positron emission tomography (PET) scans may be helpful in the absence of Octreo Scan.

Whipple resection is a favoured approach for therapy in 58% patients of ampullary carcinoids.⁸ Of late, for small benign tumours, local excision or endoscopic ampullectomy is under trial. We performed Whipple procedure in our patient with negative resection margins on pathology report.

Prognostically, ampullary carcinoid is a benign disease. Five-year survival rate is 90%, and only 4 (6%) patients died of metastatic disease to date.³ Hepatic metastases are treated with cytoreduction, radiofrequency ablation, embolisation alone, or with cytotoxic drugs.

Conclusion

Carcinoid tumours of ampulla of Vater are extremely rare causes of extra-hepatic biliary obstruction. These are slow-growing tumours with an excellent prognosis for completely resected localised disease. Histopathological diagnosis remains the gold standard. Whipple operation can be preferably done in selected patients.

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