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Research Article

PREVALENCE OF NEUROENDOCRINE TUMORS IN THE AMPULLA OF VATER AND PERIAMPULLARY REGION

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Abstract:

Background: Tumors of the Ampulla and the periampullary region are rare and often malignant. Their prognosis is generally better than for other digestive malignancies, due to their different histology and because the clinical manifestations tend to manifest themselves earlier.

Objective: To see the frequency of malignant lesions of ampullary and periampullary region in patients with obstructive Jaundice and its association with smoking.

Methods: This was an analytical study. Study was done at Allied Hospital Faisalabad. Total 94 patients were included in the study. Patients selection was done by using a pre defined inclusion and exclusion criteria. The collected samples were processed for histopathology and only data of the patients present with obstructive jaundice, ampullary swelling and periampullary masses were recorded in the specially designed proforma for this study.

Results: Mean age of all patients was 58.20±12.02 years. Age range of patients was 35 -80 years. Gender distribution shows that there were 66% male and 34% female patients. Male patients were greater in number as that of female patients. Smoking status shows that 47% of the patients were smokers. According to histopathology report there were 72(77%) patients who had malignancy. There were 34% patients who had well differentiated adenocarcinoma, 13.8% had moderately differentiated adenocarcinoma and 12.8% had chronic non specific enteritis. These are the top 3 tumors diagnosed with histological findings. Other types of tumors can be seen in above table.

Conclusion: Frequency of malignant lesions of ampullary and periampullary region in patients with obstructive Jaundice is quite high. Malignancy occurs more commonly in the ampulla of Vater than any other area in the small intestines. The proximity of these ampullary and periampullary malignancies close to the vital structures of pancreaticobiliary system results in clinical challenges to be faced in managing these pathologies.

Key Words: Ampullary, Periampullary, Tumors, Malignancy, Bile duct, Neoplasm, Duodenum

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INTRODUCTION:

The word Ampulla mean flask like dilatation of a tubular structure. The location of the ampulla is at the major duodenal papilla. The ampulla of vater is 1.5 cm long and is the site where the common bile duct and the pancreatic converge. It marks the area, where the celiac trunk stops supplying the gut and the superior mesenteric artery takes over, thus is an important landmark of anatomical transition from foregut to mid gut, It is surrounded by muscular fibers forming a sphincter named as sphincter of Oddi. The other name for the ampulla of vater is hepatopancreatic papilla.(2)

The Periampullary region is the area around the ampulla > Periampullary tumors are those arising out of or within 1cm of the papilla of Vater, including ampullary, pancrease, bule duct and duodenal tumors.(3)

Ampullary lesion are common in male patients and in people above 60 years especially in heavy smokers, alcohol, coffee, high fat, high protein, low fruit and low vegetable intake. The patient of ampullary growth presents with painless obstructive jaundice, anorexia, weight loss and pale colored stools with silver streaks (mostly seen in ampulla tumors).(4) The causes of ampullary and periampullary cancer are not known however the risk factors most consistently identified is cigarette smoking which is around 25 to 30%.(4) Carter et al in 2008 suggest that, histologically, ampullary tumors is classified as either pancreatobiliary or intestinal, and that the behavior of the tumors reflects the classification. The intestinal ampullary adenocarcinomas is similar to that of their duodenal counterparts, whereas pancreatobiliary tumors follows a more aggressive course, similar to pancreatic adenocarcinomas.(5)

Ampulla may be involved by malignant lesions. Malignant lesion include adenocarcinoma, colloid carcinoma, hepatoid adenocarcinoma, neuroendocrine tumors. Other malignancies include lymphoma, carcinoid, stromal tumors including liproms, GIST (gastrointestinal stromal tumors) Kaposi sarcoma. Carcinoid tumors are 3% of the ampullary tumors and are more aggressive than duodenal carcinoid tumors. Adenocarcinoma may arise from villous or tubulovillous adenoma. It is associated with multiple polyposis syndrome and neurofibromatosis. Colloid carcinomas have greater association with intraductal papillary mucinous neoplasm and tubular and tubulovillous adenomas. Hepatoid adenocarcinoma is a rare condition produces alpha feto protein in blood and similar tumors are found in ovary, lung and stomach. Large cell tumor, a

neuroendocrine carcinoma is a highly aggressive tumor. Lymphomas more commonly follicular have high incidence in duodenum but usually in periampullary region. They may mimic pancreatic adenocarcinoma and they are associated with multiple small polyps.(6)

Objectives:

The main objective of the study is:

1. Frequency of malignant lesions of ampullary and periampullary region in patients with obstructive Jaundice.
2. Association of ampullary carcinoma with Cigarette smoke as a Carcinogen

MATERIAL AND METHODS:

This analytical study was conducted in the Allied Hospital Faisalabad. Study was conducted on patients presenting in the department of endoscopy with ampullary or periampullary masses presenting with obstructive jaundice and who were underwent ERCP procedure in the endoscopy department.

Inclusion criteria:

1. Formalin fixed specimen of patient with suspicious mass in duodenum, ampullary and periampullary region with complete information as described in attached histopathology request proforma.
2. Adult patients of both genders were included
3. Patients presented at endoscopy department of Sheikh Zayed Hospital, Department of gastroenterology with signs and symptoms of obstructive jaundice.

Exclusion criteria:

1. Inadequate biopsies were excluded
2. Autolysed biopsies were also excluded

Sample size:

Biopsy specimen of 94 patients was enrolled for the study using inclusion criteria. Sample size was estimated by using 5% level of significance with expected frequency of 57% ampullary carcinoma as reported by a study conducted on patients with ampullary masses at Isra university, with 10% margin of error. The sample size calculated was 94 by using WHO calculator for single proportion.

Data collection:

Purpose of this study was explained to all patients. Informed consent was taken from all patients. All patients were enquired about the symptoms, previous history of jaundice, any previous medical history including dietary history such as intake of fatty food,

high protein, alcohol and especially cigarette smoking, history of fever, pale colored stools, pain in abdomen, icterus, vomiting, nausea and weight loss. This data was recorded into attached specific designed study proforma. Through the information provided by the patient and patient hospital record provided in file after the consent of patient through signed consent form.

Sample collection:

Formalin fixed specimen of mass/lesions of ampullary/periampullary region biopsies were received in the Histopathology department from the department of Endoscopy after ERCP.

Specimen processing and diagnosis of carcinoma:

The collected samples were processed for histopathology and only data of the patients present with obstructive jaundice, ampullary swelling and periampullary masses were recorded in the specially designed proforma for this study. Specimen collected

and slides made were analyzed by and reported in the Histopathology Department.

Statistical analysis:

All data was entered into a standard proforma. Data was coded and entered using SPSS version 16. Analytical statistics, frequencies and percentages were computed for qualitative variables of gender and clinical features like, nausea, vomiting, pain in abdomen, obstructive jaundice.

RESULTS:

Total 92 patients were included in this study. Mean age of all patients was 58.20 ± 12.02 years. Mean age of male and female patients was 57.69 ± 12.07 and 59.18 ± 12.03 years respectively. Age range for male patients was 35-76 years and for female patients age range was 45-80 years. Gender distribution shows that there were 66% male and 34% female patients. Male patients were greater in number as that of female patients.

Table 01: Clinical History Of Patients

	Clinical History		Total
	Yes	No	
<i>Jaundice</i>	69(73.4%)	25(26.6%)	94
<i>Fever</i>	50(53.2%)	44(46.8%)	94
<i>Vomiting</i>	64(68.1%)	30(31.9%)	94
<i>Weight Loss</i>	58(61.7%)	36(38.3%)	94
<i>Pain in Abdomen</i>	83(88.3%)	11(11.7%)	94

Clinical history of patients shows that 69(73.4%) patients had Jaundice, 50(53.2%) patients had fever, 64(68.1%) patients had vomiting complaint, 58 (61.7%) patients had complaint if weight loss and 83 (88.3%) patients reported pain in abdomen.

Table 02: Extent Of Tumor As Per Radiological Findings

	Frequency	Percent
<i>Periampullary Region</i>	20	21.3
<i>Lower end of CBD</i>	1	1.1
<i>Duodenum</i>	8	8.5
<i>Ampulla</i>	65	69.1
<i>Total</i>	94	100.0

According to radiological findings 20(21.3%) patients had tumor in perampullary region, 1(1.1%) patient had tumor in lower CBD region, 8(8.5%) had tumor in duodenum and 65(69.1%) patients had tumor in ampulla. It was seen that about 69.1% of patients had tumor in ampullary region as compared to other regions.

DISCUSSION:

Tumors in the periampullary region arise in the papilla of Vater and the two centimeters surrounding it. Histologically, they could originate in the duodenal wall, pancreatic tissue, the wall of the distal bile duct or the structures of the ampullary complex. The papilla

of Vater is formed by the confluence of the pancreatic duct and the bile duct and by the sphincter of Oddi that surrounds it. (6) The sphincter of Oddi also has components for the bile duct and pancreatic duct which are outside the papilla. The primary ampullary tumors originate in the epithelium of the bile duct, the pancreatic duct or the duodenal mucosa. Ampullary and periampullary tumors are infrequent, but have a malignancy rate of more than 90%. Periampullary tumors comprise 5% of malignant gastrointestinal tumors, while ampullary tumors comprise less than 1%. (7) The overall prevalence of resected periampullary cancers show in 50%-70%, cancer of the head of the pancreas, ampullary cancer in 15%-25%, biliary cancer in 10% and duodenal cancer in 10%. The prognosis and survival of patients depends on the tissue of origin and the tumor stage. Survival of these patients is greatest for ampullary and duodenal tumors (4 to 5 years), intermediate for bile duct tumors (3 years) and lowest for pancreatic tumors (less than 1 year). Accurate histological classification is not always possible, even after careful histopathological sample review.(8)

In this study mean age of patients was 58.20 ± 12.02 years. Male patients were greater as compared to female patients. Frequency of malignancy shows that there were 77% of patients who had malignanc (9). All periampullary cancers arise from their respective epithelia and almost all are adenocarcinomas. Other tumors in the ampullary and periampullary region

are basically ampullary villous adenomas or tubulovillous adenomas, hemangiomas, leiomyomas, leiomyofibromas, lipomas, lymphangiomas and neuroendocrine tumors.(10)

CONCLUSION:

Frequency of malignant lesions of ampullary and periampullary region in patients with obstructive Jaundice is quite high. Malignancy occurs more commonly in the ampulla of Vater than any other area in the small intestines. Given its proximity to vital structures of the pancreaticobiliary system, management of pathology involving the ampulla of Vater is a clinical challenge.

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