



HISTOMORPHOLOGIC EVALUATION OF PANCREATIC AND PERIAMPULLARY LESIONS: A SINGLE CENTER EXPERIENCE.

Pathology

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ABSTRACT

Pancreaticoduodenectomy by Whipple's resection is the procedure of choice for tumors of the pancreas and periampullary region. Periampullary region includes ampullary, periampullary, pancreatic and duodenal anatomical sites. Resection surgery is indicated in any mass lesion at this site. A descriptive study was carried out for a period of 5 years from October 2013 to October 2017 in the Department of pathology of our institute. 63 cases (both nonneoplastic masses and neoplastic) subjected to Whipple's operation out of a total 141 endoscopic biopsy proven and USG proven cases. Periampullary carcinoma was the predominant tumor of the endoscopy biopsy and pancreatic ductal adenocarcinoma of the pancreatic mass in USG. Our aim was to analyse the histopathologic features of the tumors included in the study.

KEYWORDS

Endoscopic biopsy, Whipple procedure, Histomorphology.

Introduction:

Pancreatic and periampullary mass lesions can be inflammatory, benign or malignant. A recently recognised IgG4 related autoimmune pancreatitis presents as a mass lesion mimicking a stromal neoplasm. Pancreatic neoplasms can be classified based on lines of cellular differentiation (ductal, serous, mucinous, acinar, pancreatoblastoma, neuroendocrine, solid pseudopapillary, mesenchymal, lymphoma), gross configurations (solid, cystic), noninvasive neoplasm [1,2].

Periampullary carcinoma arises within 2cm of the major papilla in the duodenum. They encompass neoplasms of ampulla of Vater, intrapancreatic distal CBD, second part of duodenum tumors involving the papilla, tumors of pancreatic head involving ampulla [3]. The aim of this study was to analyze meticulously each case with histomorphology, few cases correlated with guided fine needle aspiration cytology and some cases needed immunohistochemistry confirmation.

Methods:

Pancreaticoduodenectomy (Whipple procedure) is the resection of choice for lesions in pancreatic and periampullary region. Endoscopic biopsy for periampullary masses were received for a histopathologic probable diagnosis which were clinically and or radiologically suspicious lesions. Subsequently Whipple specimen was received containing partial gastrectomy, gall bladder with common bile duct, duodenum and pancreas along with attached lymph nodes. In those fresh specimen, several anatomic margins like CBD, pancreatic, peripancreatic soft tissue were identified and inked after displaying in anatomical position. The specimen were cut along the greater curvature of stomach, anterior wall of duodenum. The luminal contents was rinsed in normal saline and any mucosal lesions, particularly surrounding ampulla, were identified. A probe was placed in proximal CBD and advanced towards the ampulla. Similarly the probe was placed in main pancreatic duct towards the ampulla. With a fine scissor, the path was longitudinally cut along the probe to detect the tumor location and extension. All regional lymph nodes, namely, superior, inferior, anterior, posterior to pancreas, lymph nodes from lateral aortic, hepatic artery, superior mesenteric, subpyloric and celiac areas were retrieved. After the grossing protocol procedure, the tissues were processed and stained with H&E stain.

Results:

Table 1: Age wise distribution of cases

Age (years)	n(%)
20-30	18(12.77)
31-40	39(27.66)
41-50	39(27.66)
51-60	27(19.15)
61-70	18(12.77)

Table 2: HP diagnosis in resected specimens

DIAGNOSIS	n(%)
Malignant	53(84.12)
Ductal adenocarcinoma	17
Acinar cell tumor	01
Solid pseudopapillary neoplasm	04
Pancreatic endocrine neoplasm	02
Periampullary carcinoma	26
Benign	1(0.63)
Serous cystadenoma	
Non neoplastic cyst	04(6.34)
Pseudocyst	
Inflammatory lesions	05(7.93)
Tropical pancreatitis	04
IgG4 related autoimmune pancreatitis	01

Table 3: HP findings in adenocarcinoma (pancreatic and periampullary)

	Periampullary carcinoma (n=29)	Pancreatic carcinoma (n=24)
Tumor diameter (cm)		
Mean	2.2	3.2
Range	1.5-4.0	2-4.3
Tumor differentiation		
Well	15	12
Moderate	12	12
Poor	02	-
No. of lymph nodes involved	12 (Range:8-12)	17 (Range: 16-18)
Lymphovascular invasion	15	09
Positive Resected margin status	12	08

Table 4: Pathologic staging of malignant tumors

pT	%
pT1	12.23
pT2	47.38
pT3	34.49
pT4	5.9

Sixty three patients underwent Whipple's pancreaticoduodenectomy procedure during a period of 5 years (October 2013 to October 2017). Male to Female ratio was 1.5:1. The mean age of the patients was 46 years. Maximum percentage (27.66%) belonged to 31 to 50 years. [Table 1] Most of the patients presented with obstructive jaundice. Tropical pancreatitis showed atrophic pancreatic acini, lymphocytic

infiltration and calcifications [Figure 1]. Periapillary carcinoma was the predominant tumor of the malignancies in this study. Two types of patterns were noticed. 1. Pancreatobiliary (infiltrating glands are simple type with rounded nuclei and desmoplastic stroma) 2. Intestinal (infiltrating glands resembles colonic adenocarcinoma with elongated nuclei and luminal necrotic materials [Figure 2]. Amongst the pancreatic malignancy, invasive ductal adenocarcinoma (neoplastic glands with mucin, stratification and papillary structures) had the maximum percentage [Figure 3]. Two cases of pancreatic endocrine neoplasm (functioning type with gastric ulcers and non-functioning types) were analysed with FNAC and immunohistochemistry [Figure 4].

Tumor size, differentiation, LVI, no. of lymph nodes involved were noted in each case. Adequate surgical margin clearance were achieved in majority except in certain cases [Table 3]. Pathologic staging is shown in table 4. Majority (47.38%) were in pT2 where the mass size is within 2cm in case of pancreatic tumors and involvement upto duodenal wall for periampullary carcinoma.

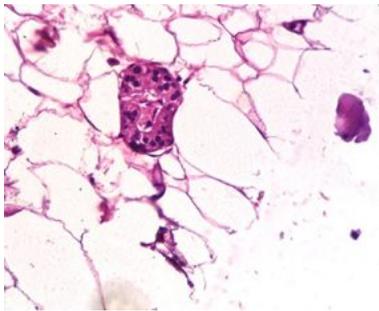


Figure 1: Pancreatic acinar atrophy with calcification

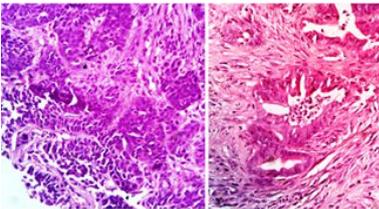


Figure 2 : Endoscopic biopsy of periampullary mass ; Pancreatod uodenal type [left]; Intestinal type [right]

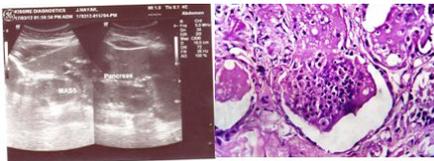


Figure3: USG of pancreatic mass; [Left] Invasive ductal adenocarcinoma (moderately differentiated)[right]

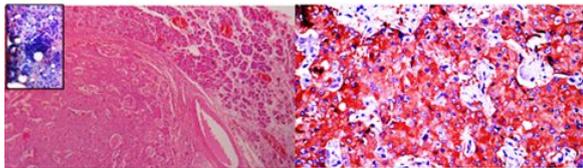


Figure4: Pancreatic endocrine neoplasm(H&E)[left]; FNA(inset); Synaptophysin IHC[Right]

Discussion:

Meticulous evaluation of the mass, its histomorphology type, margin status, no. of lymph nodes involvement is mandatory in Whipple specimen as a life saving procedure. we tried to report the resected specimen following surgical operative procedure as per protocol by pathologic TNM staging on AJCC [4]. Minimum 12 lymph nodes were evaluated in most of the specimens [5]. Yoe et al showed their study of 201 patients with negative margins that 5 year survival was 26% as compared to positive margin at 8% [6]. Periapillary carcinoma is the predominant tumor type which is also noticed in similar studies [7]. In the study group of Periapillary carcinoma, majority (64%) showed

Pancreatobiliary pattern and the rest were in Intestinal category [8]. Intestinal type carries a better prognosis than Pancreatobiliary type [9].

Pancreatic ductal adenocarcinoma is the commonest type in the pancreatic masses [6]. We found two cases of endocrine neoplasms, one functioning with gastric ulcers and one non-functioning got confirmed by synaptophysin.

Endoscopic biopsy proven inflammatory lesions turned out to be Periapillary carcinoma in Whipple resection. This false negative cases may be due to inflammation associated with the malignancy focus and the tissue taken from the inflammatory field by the endoscopic biopsy forceps [2].

Conclusion:

Many of our cases are in higher stage (pT2, pT3) So early diagnosis of cancer in endoscopic biopsy prevents progression to advanced stages [10,11].

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