



A Study on Role of USG Guided FNAC in Chronic Pancreatitis with Headmass

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Abstract

Pancreatic cancer is one of the leading causes of death among gastrointestinal malignancies. Chronic pancreatitis (CP) is strongly associated with pancreatic malignancy and may be the causative factor. Most of the pancreatic tumours (70 %) and most of inflammatory masses in CP are situated in the head of pancreas. Common pancreatic malignancies include adenocarcinomas (90%), cystic neoplasms (5%), and neuroendocrine tumors (2-5%). Preoperative tissue diagnosis is necessary in certain situations. The common techniques used to image pancreas are computerised tomography (CT), abdominal ultrasound, endoscopic ultrasonography (EUS) and ERCP. For those patients who have an imaging characteristic of benign disease, either conservative or drainage procedures can be performed. For patients who have an imaging characteristic of malignant head mass, pancreatico-duodenectomy or palliative procedure can be performed depending on the stage of the disease. There exists an indeterminate group of patients who cannot be categorised as benign or malignant based on imaging. It is for this group of patients where tissue diagnosis plays an important role for proper treatment selection for the patient. Ultrasound (USG) guided fine needle aspiration cytology (FNAC) is a highly useful tool in this subset of patients with indeterminate mass. In this study we have evaluated various etiological factors, diagnostic modalities and effective usefulness of ultrasound guided FNAC in diagnosis of malignancy in chronic pancreatitis with head mass and its management.

Keywords: Tumor markers, USG guided FNAC, pancreatectomy.

Introduction

Inflammation is the main cause of a mass in head of pancreas in CP and occurs in 40–70% of the patients. The difficulty indistinguishing between inflammation and malignancy in head mass make it difficult to establish a preoperative diagnosis of pancreatic cancer. Since pancreatico-duodenectomy is associated with high morbidity and mortality, a preoperative tissue diagnosis is

mandatory to avoid disastrous complications for benign diseases. Resectional surgery for a benign disease may be accomplished with high morbidity and mortality, while drainage operations for malignancy would turn out to be a disaster for the patient. With the recent advances in imaging and low mortality in experienced centres indications for preoperative tissue diagnosis have decreased. Preoperative tissue diagnosis is necessary in

certain situations⁽⁵⁾. These include the conditions where neo-adjuvant therapy is used, and situations of diagnostic doubt involving benign strictures or focal areas of pancreatitis, in which either no surgery or a difficult surgery would be performed. When non-operative palliation is being considered for various situations, a tissue diagnosis becomes necessary. In specific instances a favourable histology report may prompt a surgery that would not have been considered in the setting of adenocarcinoma. Curable conditions like lymphoma or tuberculosis may be distinguished from adenocarcinoma by preoperative biopsy. Ultrasound (USG) guided fine needle aspiration cytology (FNAC) is a highly useful tool in this subset of patients with indeterminate mass.

Materials and Method

The primary objective of this study was to Determine the sensitivity and specificity of transcutaneous ultrasound (USG) guided fine needle aspiration cytology (FNAC) in the evaluation of pancreatic head masses (PHM). To compare its sensitivity & specificity with that of CA 19-9. This Retrospective cum Prospective study was conducted in Institute of Surgical Gastroenterology & Liver Transplantation, Stanley Medical College, Chennai, India from January 2013 to 2015. The study comprised of patients of both the sex with the age group of 16 – 75 registering in the Department of Surgical Gastroenterology. The patients should have been diagnosed as having chronic pancreatitis with head mass. One hundred and seventy six patients, who were treated in our institute with CP and head mass between 2013 and 2015, were analysed. One hundred and thirty five patients whose imaging were characteristic of the nature of disease or those who did not undergo surgery (conservative management or palliative intervention procedures) were excluded from the study. The remaining forty-one patients who underwent FNAC followed by surgery were included in the study. Preoperative transcutaneous USG guided FNAC

from the head mass was done in patients with indeterminate lesions

Observation

In patients where the FNAC turned out to be positive, pancreatico-duodenectomy was offered. In patients where the FNAC report was negative, Frey’s procedure was performed. The pancreatic head tissue which was cored out was sent for histopathological examination. Depending upon the final histopathology of resected specimen, patients were divided into two groups

Group I: malignant head mass

Group II: non-malignant head mass

Sensitivity and specificity of FNAC was identified against final histopathology and compared with CA19-9. Out of the One hundred and seventy six patients, who presented to our department with chronic pancreatitis and head mass, only forty-one patients who underwent FNAC followed by surgery were eligible at the end of the study. Out of 41 patients, 19 (46.3%) patients were found to have malignant pathology, and 22 (53.7%) patients were found to have benign pathology. (Fig 1) (Table 1)

Table 1: number of benign and malignant patients in the study group

		HPE			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	POSITIVE	19	46.3	46.3	46.3
	NEGATIVE	22	53.7	53.7	100.0
Total		41	100.0	100.0	

Out of 41 patients, 19 (46.3%) had elevated CA19-9 and 22 (53.7%) had normal values.

Table 2: Distribution of elevated CA19-9 in study group

		CA19-9			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	POSITIVE	19	46.3	46.3	46.3
	NEGATIVE	22	53.7	53.7	100.0
Total		41	100.0	100.0	

Among the malignant group 68.4% had elevated CA19-9 and only 31.6% had normal values,

whereas in the benign group only 27.3% had elevated CA19-9 whereas 72.7% had normal values.

Out of 41 patients, USG guided FNAC was positive for malignancy in 15 (36.6%) and negative for malignancy in 26 (63.4%). (Table 3)

Table 3: Distribution of positive and negative cytology in study group

CYTOLOGY				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid POSITIVE	15	36.6	36.6	36.6
NEGATIVE	26	63.4	63.4	100.0
Total	41	100.0	100.0	

Among the malignant group, 15 had positive cytology and 4 had negative cytology. Whereas in the non-malignant group, all of them negative cytology and none had positive cytology.

Among the various demographic parameters analysed in the study, four of them was associated with a high incidence of malignancy. These include: Older age, Diabetes mellitus, Significant weight loss, Jaundice. Hence these parameters can be used along with CA19-9 as predictors of malignancy in chronic pancreatitis with head mass in the preoperative evaluation

Table 4 Demographic Variables Analysed

Variables	Benign (22)	Malignant(19)	P Value
Mean age	44.36+/-10.91	51.16+/-9.11	0.04
Gender			0.11
Male	21(51.20)	15(36.60)	
Female	1(2.40)	4(9.80)	
Diabetes	6(14.6)	13(31.7)	0.008
Steatorrhea	3(7.3)	2(4.9)	0.76
Smoking	12(29.3)	8(19.5)	0.43
Alcohol	15(36.6)	8(19.5)	0.9
Weight loss	11(26.8)	16(39)	0.02
Worsened pain	4(9.8)	37.3)	0.84
Vomiting	11(26.8)	5(12.2)	0.12
Jaundice	5(12.2)	15(26.6)	0.00

Out of 41 patients, 16 (39%) underwent pancreaticoduodenectomy, 19 (46.3%) underwent freys procedure and remaining 6 (14.6%) underwent other procedures like triple bypass, gastrojejunostomy, hepaticojejunostomy and choledochoduodenostomy. (Table 5)

Table 5: Treatment distribution in study group

TREATMENT					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	WHIPPLE	16	39.0	39.0	39.0
	FREYS	19	46.3	46.3	85.4
	OTHERS	6	14.6	14.6	100.0
	Total	41	100.0	100.0	

Discussion

The most disastrous complication of chronic pancreatitis is malignancy which is not predictable in the course of disease. It is extremely difficult to differentiate inflammatory head mass from malignant mass preoperatively in these patients. Malignancy mimics inflammatory head mass and vice-versa by imaging. Pathological differentiation is also difficult between the two lesions due to extensive desmoplastic reaction. The differentiation is also difficult intraoperatively. Malignancy requires a radical procedure (pancreatico-duodenectomy), whereas non-malignant mass require only a drainage procedure. With recent advances in imaging, in majority of situations, a preoperative diagnosis is feasible. In certain situations where a conclusion cannot be arrived preoperatively, a tissue diagnosis becomes mandatory in order to avoid unethical treatment options. Pancretico-duodenectomy for inflammatory mass entails undue morbidity and mortality for a benign cause, whereas Frey’s procedure for a malignant lesion is a major disaster for the patient.

In order to diagnose these indeterminate cases, USG guided FNAC of the mass preoperatively gives a definitive tissue diagnosis for planning further management. The purpose of this study was to assess the efficacy of USG guided FNAC, and to include it as a protocol for diagnosis of indeterminate case in the evaluation of chronic pancreatitis with head mass. Out of the 41 patients enrolled in the study, 36 were men and 5 were women. According to the final histo-pathology, 22 patients had inflammatory mass and 19 patients had malignant mass. Important features that were predictive of a malignant mass in chronic pancreatitis were older age, jaundice, diabetes,

and significant weight loss. Out of the 41 patients, cytology was positive in 15 patients, all 15 underwent pancreatoduodenectomy. Cytology was negative in 26 patients, and all of them underwent intraoperative frozen section. Among them, 2 patients had an intraoperative trucut biopsy positive for malignancy and so one underwent pancreatoduodenectomy and the other underwent triple bypass due to inoperability. 19 patients underwent Frey's procedure. The rest underwent anterior gastro-jejunostomy, hepatico-jejunostomy and choledocho-jejunostomy depending on the intraoperative findings. Among the 19 patients who underwent Frey's procedure, 17 had a cored tissue histopathology of inflammatory nature and 2 had malignancy though their intra-operative frozen section was negative. These 2 patients underwent adjuvant chemotherapy.

26	Cytology negative
19	Freys (2 - post op HPE – positive)
2	Gastro-jejunostomy
2	Choledocho-duodenostomy
1	Hepatico-jejunostomy
1	Triple bypass (frozen positive)
1	Whipple (frozen positive)

15	Cytology positive
15	Whipple

USG guided FNAC has a sensitivity of 79% and a specificity of 100% which is highly reliable when compared to CA 19-9 which has a sensitivity of 68% and a specificity of 73%. Thus USG guided FNAC can be used a routine protocol in the preoperative evaluation of indeterminate case of chronic pancreatitis with head mass.

Conclusion

Transcutaneous USG guided FNAC is a safe, relatively simple, easily available and above all, a reliable procedure in the diagnosis of chronic pancreatitis with head mass especially in cases where imaging is not contributory. It is of much use especially in centres where endoscopic ultrasound facilities are not available.

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