

**Table 5. Jaundiced Patients No. 10
Comparison C.T. & U.S. findings.**

Confidence Level*	U.S. Findings	C.T. Findings
0	1	-
1	-	-
2	-	-
3	5	3
4	1	2
5	3	5

* 0 = Technically not satisfactory

1 = Absolutely normal

2 = Probably Normal

3 = Possibly abnormal

4 = Probably abnormal

5 = Absolutely abnormal

**Table 6. Non Jaundiced Patients No. 5
Comparison C.T. & U.S. findings.**

Confidence Level*	U.S. Findings	C.T. Findings
0	-	-
1	1	-
2	1	-
3	2	1
4	-	-
5	1	4

* 0 = Technically not satisfactory

1 = Absolutely normal

2 = Probably Normal

3 = Possibly abnormal

4 = Probably abnormal

5 = Absolutely abnormal

Discussion

Many authors have written extensively on pancreatic ultrasound and C.T. (1-5). C.T. has been considered superior with high accuracy and high specificity & sensitivity^{1,2,3}.

One interesting aspect of our data is the high accuracy of Ultra sound as well, in patients with obstructive jaundice. However even when U.S. was successful in identifying pancreatic lesions, it does seem to under estimate the extent and the observer also has a lower confidence level interpreting the lesion. In other words C.T. Provides an added dimension by facilitating visualization of the entire pancreas.

The sensitivity and accuracy of C.T. was seen to be further increased in non jaundiced patients perhaps due to small sized lesions or the fact that the body is not well visualized on U.S.

It was noticed that even though C.T. & U.S. are complementary. The C.T. diagnosis was the correct one when they disagreed. This has also been shown by others^{7,8}. This study also shows that a negative U.S. does not exclude significant and at times life threatening pancreatic lesions.

Conclusion

This study supports the findings of other larger series where CT has been shown to be superior to U.S. in diagnosing pancreatic malignancy. However with sound affairs equally sensitive in the jaundiced patient.

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included the patients presenting complains, their age, sex, their U.S. & C.T. findings. The U.S. & C.T findings were classified as the confidence levels. 0 = Technically not satisfactory, 1 = Absolutely normal, 2 = Probably normal, 3 = Possibly abnormal, 4 = Probably abnormal, and 5 = definitely abnormal.

Results

A total of 28 patients were diagnosed to have pancreatic cancer in the mentioned period. Most common presenting symptom being obstructive jaundice present in 20. The remaining 8 had a combination of symptoms with abdominal pain being the most common and weight loss and anorexia the next most frequent symptoms.

Table 1. Symptoms

Symptoms	No. of Patients (28)
Jaundiced Patients	20
Non Jaundiced Patients	8

The breakdown of the patients on the basis of site of cancer, sex and age is shown in Table 2 All the patients with obstructive jaundice had cancer of the head of the pancreas. However 2 of the 8 non jaundiced patients had cancer of the body of the pancreas. However 2 of the 8 non jaundiced patients had cancer of the body of the pancreas. No cancer was found in the neck tail.

Table 2.

Jaundiced PTS (20)					
Site	No.	Males	Age (SD)	Females	Age (SD)
Head	20	8	57 (16.6)	12	57 (8.2)
Neck	-	-	-	-	-
Body	-	-	-	-	-
Tail	-	-	-	-	-
Non Jaundiced PTS (8)					
Head	6	4	59 (4.1)	2	43 (17)
Neck	-	-	-	-	-
Body	2	1	70	1	46
Tail	-	-	-	-	-

US. was performed in most of the patients with obstructive jaundice i.e. 17 out of 20. Their findings are shown in Table 3. Two of the 17 US.

done were technically not satisfactory due to gas in bowel. Of the remaining 15 all had findings consistent with pancreatic abnormalities.

**Table 3. Jaundiced Patients No. 17
Ultra Sound Findings**

Confidence Level*	Number of Patients
0	2
1	-
2	-
3	6
4	3
5	6

* 0 = Technically not satisfactory
1 = Absolutely normal
2 = Probably Normal
3 = Possibly abnormal
4 = Probably abnormal
5 = Absolutely abnormal

Most of the non jaundiced patients had their C. T. done i.e. 7 out of 8. The findings were definitely abnormal in 6 and possibly abnormal in one. (Table 4). Both C.T. and US were done in 10 of the jaundiced and 5 of the non jaundiced patients. (Table 5 & 6). In obstructive jaundice patients U.S. was technically not satisfactory in one. All of the rest being positive for abnormal findings, mostly having low confidence levels. CT of all the patients were technically satisfactory and were able to recognise pancreatic abnormalities in all. The confidence level with C.T. was higher compared to US.

In non jaundiced patients the U.S. was normal in 2 out of 5 patients later diagnosed to have pancreatic cancer. C.T. of the same individuals showed definite pancreatic mass lesions.

**Table 4. Non Jaundiced Patients No. 7
C.T. findings**

Confidence Level*	Number of Patients
0	-
1	-
2	-
3	1
4	-
5	6

* 0 = Technically not satisfactory
1 = Absolutely normal
2 = Probably Normal
3 = Possibly abnormal
4 = Probably abnormal
5 = Absolutely abnormal

EVALUATION OF COMPUTED TOMOGRAPHY AND ULTRASOUND OF PANCREAS IN JAUNDICED AND NON JAUNDICED PATIENTS WITH PANCREATIC CANCER

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Abstract

A retrospective study was performed to find a single best imaging method for pancreatic cancer

In a total of 28 patients, 20 presented with obstructive jaundice and the remaining 8 presented with a mixture of symptoms such as abdominal pain, weight loss and anorexia.

10 of the jaundiced and 5 of the non jaundiced patients had both computed tomography (C.T.) and ultrasound (U.S.) examinations.

This study shows that U.S. can be used as a single best modality in patients with obstructive jaundice suspected of pancreatic malignancy. It also shows that C.T. is much superior modality to U.S. in non jaundiced patients with symptoms suggestive of pancreatic malignancy.

Index Terms: Pancreatic cancer, clinical presentations of pancreatic cancer, computed tomography comparative study, ultra sonography comparative study.

Introduction

Pancreatic lesions can be visualised and diagnosed by invasive and non invasive procedures. In non invasive procedures cross sectional imaging with ultrasound (U.S.) and computed tomography (C.T) has afforded rapid and accurate evaluation of pancreas¹.

Both these modalities have their own advantages and disadvantages. Ultrasound being reliable and reproducible with a sensitivity of 69% and a specificity of 82%¹. It is 85% accurate for pancreatic cancer^{2,3}. It has low cost, no ionizing radiations and is performed rapidly⁴. U.S. has its limitations with obese people, with high amount of bowel gas and lesions <2 cms. in size⁵.

Computed tomography on the other hand is 96% accurate for pancreatic cancers² and can pick up lesions less than 2 cms. in size⁵. It however exposes the individuals to ionizing radiations and is difficult for patients (pts.) who cannot tolerate oral or intravenous (i.v.) contrast medium^{1,5}. Above all it is expensive. The cost may become the single most important disadvantage especially in a developing country.

Most of the patients coming to a doctor with signs and symptoms suggestive of pancreatic cancer end up having both C.T. & U.S. done. It might be possible to select one single best diagnostic procedure for patients suspected of pancreatic cancer keeping in mind the advantages and disadvantages of both.

Therefore a study was carried out at the Aga Khan University reviewing the C.T. & U.S. of patients diagnosed as having pancreatic cancers. Patients were classified into two groups those with obstructive jaundice and the non jaundiced patients.

Materials and Methods

Patients admitted and diagnosed to have pancreatic cancers at the Aga Khan University from January 1988 to June 1990 were included in the study.

The diagnosis of pancreatic cancer was confirmed by histopathology at A.K.U.H. they had also had their C.T. & U.S. performed here. The radiologists performing each examination had knowledge of relevant history including signs and symptoms of the patients.

Examination Characters

C.T. was performed on General Electric C.T. 9800 Quick, and oral and i.v. contrast was used. U.S. was performed on Toshiba Sonolayer VSSA - 100A.

Data Collection

This is a retrospective study. Data was collected from the patients files and the information

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