

ANGIOGRAPHY IN PANCREATIC NEOPLASMS

*Emad I. El-Basyoni , Mostafa F. Sonbol ,
Mohamed F. Abdel Moutay. and Ibrahim M. Ghoneim*

*Radiology Department Faculty of Medicine
Al-Azhar University*

ABSTRACT

Fourteen cases of suspected pancreatic masses were examined by angiography. The localization of two insulinomas was precisely defined by pancreatic arteriography. The invasiveness was assessed in 12 cases by coeliac angiography and arteroportography.

Angiography still plays a significant role in localization of endocrine tumours of the pancreas and visualization of vascular affection for operability of other tumours especially when they are not evaluated by other modalities.

INTRODUCTION

Angiography is now rarely indicated for diagnosis of pancreatic carcinomas, the majority of these lesions being readily diagnosed by other non invasive techniques as ultrasound and computed tomography. Also the inoperability may be obvious in many cases by these methods. However, the value of angiography is to show the vascular involvement by the tumour for operability in cases which re not suffi-

ciently evaluated by other modalities. In addition, selective pancreatic arteriography is considered to be the most efficient investigation in visualization and localization of the endocrine tumours of the pancreas.

The aim of this work is to emphasize the role which is still played by angiography in diagnosis and staging of pancreatic masses.

PATIENTS AND METHODS

Fourteen cases of suspected or diagnosed pancreatic masses by clinical examination ultrasonography and/or computed tomography were presented and studied at El-Hussain & El-Sayed Galal Hospitals, Radiology Department Al-Azhar University by coeliac angiography including selective pancreatic angiography through the hepatic and superior mesenteric arteries. Visualization of the portal systems through the injection of the arteries (splenic and superior mesenteric) was also performed. Two of the fourteen cases presented with attacks of spontaneous hypoglycaemia.

8 cases were males and 6 cases were females.

Their age ranged from 24 to 66 years. The mean age was 45 years.

A Siemen, (1250 mA. and 150 K.V.) apparatus was used in the examinations. It is equipped with a floating table, over and under couch tubes, image intensifier and T.V. monitor and a puck serial film changes.

The conventional subtraction technique was used in six cases.

RESULTS

Fourteen cases were examined in this work. The results were as in the following table :

Endocrine tumours	2 Insulinomas
Benign tumours	1 Cystadema
Malignant tumours	11 Carcinomas

The site of the lesion in the pancreas :

Ten masses affected the head of the pancreas that included the two insulinomas, the cystadenoma and seven carcinomas.

Two masses affected the body.
One mass affected the body and tail.
One mass affected the tail.

All cases affecting the body and

tail were carcinomas. In cases of carcinoma, encasement of the pancreatic arteries and the splenic artery was detected in 10 lesions.

The pancreatic arcades were encased in six cases (Fig. 1) while the splenic artery was involved in 4 cases (Figs. 2 & 3).

Portal vein obstruction was detected in these cases with infiltration of the superior mesenteric vein in one of them (Fig. 4). The splenic vein was obstructed in two cases with formation of collaterals that crossed the obstruction to the portal vein (Fig. 5).

DISCUSSION

Islet-cell adenomas and other endocrine tumours of the pancreas have been shown by angiography. Despite their usually small size, they stand out clearly as a rounded bluch of contrast in the later arterial or capillary phase (Sutton, 1987).

Allison in (1986) stated that many of these endocrine tumours are too small to be demonstrated by U.S., C.T. or isotope scanning. The most useful localizing technique at present are selective pancreatic arteriography and selective portal vein sampling. The use of digital subtraction increased the accuracy of angiography and mini-

These 10 cases were inoperable.

In one of the seven malignant masses affecting the pancreatic head, the arteries were normal with free portal system. This cases was operable and proved to be a papillary carcinoma.

All the malignant tumours were poorly vascular while the cystadenoma and the insulinomas were vascular. The two insulinomas were too small to be detected by ultrasound or C.T. yet they were visualized in the late arterial phase by angiography as a small rounded vascular area (Fig. 6).

mized the amount of contrast medium.

Daggett et al. in (1981) reported that 33 patients suspected by harbouring an insulinoma have been investigated by different methods. They could localize correctly 9 insulinomas out of 18 cases examined by angiography and 2 insulinomas out of 11 instances by ultrasound while only one insulinoma out of 8 patient was localized by computed tomography.

Gunther et al. in (1985) found that ultrasound was successful in 12/20, C.T. in 9/21 and angiography in 20/31 insulinomas.

In our work, the two insulinomas could only be visualized by arteriography meaning that it is the most efficient modality at present for the direct localization of these tumours. However, hormonal assay by using selective portal vein sampling has a high success rate.

The cystadenomas of the pancreas are rare. They are multilocular possessing fine septal with a solid component or a thick wall. The main differential is from a pancreatic pseudocyst. The latter is avascular while cystadenomas are vascular tumours showing a characteristic vascular pattern by dynamic C.T. and angiography (Dick et al., 1987).

In our case, the diagnosis was emphasized by angiography after U.S. examination.

In pancreatic carcinoma, angiography is usually now used to assess the operability of the tumour when the diagnosis has already been made with the aid of other modalities (Lunderquist et al., 1986).

Bottger et al. in (1990) found that only the combination of angio-

graphy and computed tomography allowed 90% correct decision regarding the invasiveness of the tumour and operability. Warshaw et al. in (1990) showed that more than 87% of pancreatic head tumours were unresectable by combined C.T. and angiography. Both reports stated that neither modality sufficed alone.

In this work, angiography was able to define the invasiveness of the tumour in ten carcinomas showing involvement of the vascular supply of the pancreas and its portal vein drainage.

Angiography showed no vascular abnormality in one of our cases which is proved to be a papillary carcinoma after operation. Kim et al in (1985) reported two cases of papillary carcinoma which were also operable. Friedman et al in 1985 reported 12 cases. They claimed that papillary carcinoma is a rare tumour that differs histologically from the usual ductal adenocarcinoma but amenable to cure by surgical excision. They observed stretching and splaying of vessels in large tumours but encasement of the splenic artery and splenic vein obstruction were seen in one case only.

CONCLUSION

Angiography has a significant role in diagnosis and localization of the endocrine tumours of the pancreas especially in combination with other modalities.

In other tumours, its value is to find whether they are benign or ma-

lignant and to visualize the vascular involvement by the tumour especially in cases which are not sufficiently evaluated by other techniques. The combination of C.T. and angiography is the most efficient for decision of the invasiveness and operability of the tumour.

REFERENCES

- Allison, D.J. (1986) :
Arteriography
 (In) Grainger, R.G. &
 Allison, D.J. *Diagnostic Ra-*
diology An Anglo-American
Textboom of Imaging
 Churchill Livingstone. Page
 1987.
- Bottger, T., Weber, W., Gaeder-
 ritz, C., Zech, J. and Jungin-
 er, T. 1990.
Value of preoperative diag-
nossis in assessing tumour
extension of ductal pancreatic
carcinoma. Langenbecks.
Arch. Chir. 375 (1) : 33.
- Daggett, P.R., Goodburn, E.A.,
 Kurtz, A.B., Le-Quesne,
 L.P., Morries, D.V., Nabar-
 ro, J.D. and Raphael, M.J.
 1981.
Is preoperative localization of
insulinoma necessary ?
Lancet 1 : 483.
- Dick R., Less, W.R. and Ma-
 son, R. 1987.
The liver, spleen and pancre-
as.
 In Sutton, D.
Textbook of Radiology and
Medical Imaging Church ill-
Livingstone, p. 1991.
- Friedman, A.C., Lichtenstein,
 J.E., Fishman, E.K., Oertel,
 J.E., Dachman, A.H. and
 Siegelman, S.S. 1985.
Solid and papillary Epithelial
Neoplasm of the pancreas.
Radiology Feb. 154 (2) :
333.
- Gunther, R.W., Klose, K.J.
 Ruckert, K., Beyer J., Kuhn,
 F.P. and Klotter, H.J. 1985.
Localization and small islet-
cell tumours. Pre-operative
and intraoperative ultrasou-
nal, computed tomography,
arteriography, digital subtrac-

- tion angiography and pancreatic venous sampling. Gastrointest. Radiol. 10 (2) : 145.*
- Kim, S.Y., Lim, J.H. and Lee, J.D. 1985. Papillary carcinoma of the pancreas. Findings of U.S. and C.T. Radiology 154 (2) : 338.*
- Lunderquist, A., Cotton, P.B. 1986. The pancreas (In) Grainger, R.G. and Allison, D.J. Diagnostic Radiology. An Anglo-American Textbook of Imaging Churchill Livingstone. P 999.*
- Sutton, D. 1987. Arteriography and therapeutic angiography (In) Sutton, D. Textbook of Radiology and Medical Imaging Churchill Livingstone. P. 687.*
- Warshaw, A.L., Gu, Z.Y., Wittenberg, J. and Waltman, A.C. 1990. Preoperative staging and assessment of respectability of pancreatic cancer. Arch. Surg., 125 (2) : 230.*

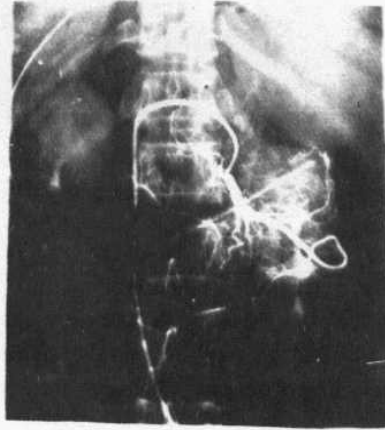


Fig. (1) The tip of the catheter is in the gastroduodenal artery which shows encasement of the superior pancreaticoduodenal artery in a case of cancer pancreatic head.

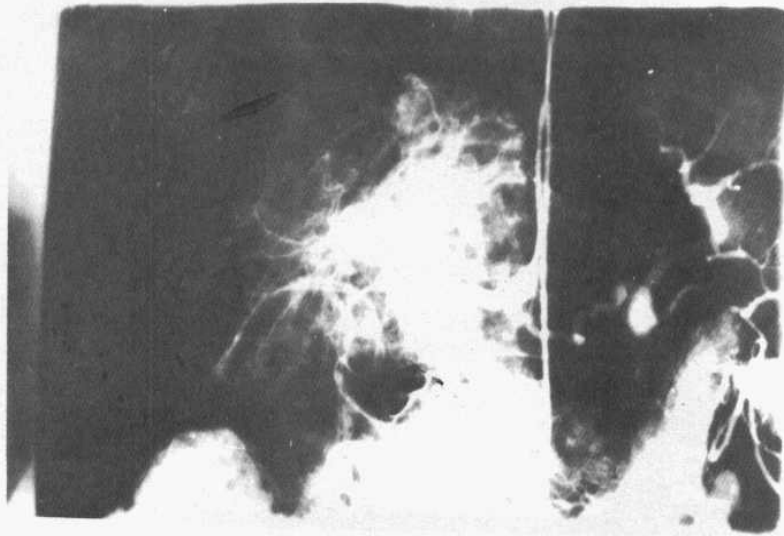


Fig. (2) Coeliac arteriography shows encasement of the splenic artery in a case of cancer body and tail of the pancreas.

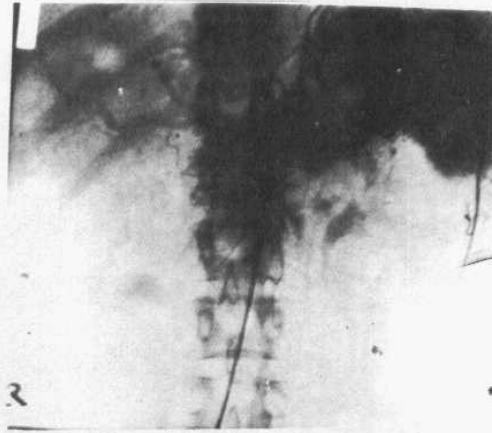


Fig. (3) Selective splenic arteriography shows encasement of splenic artery in a case of cancer of the tail of pancreas.

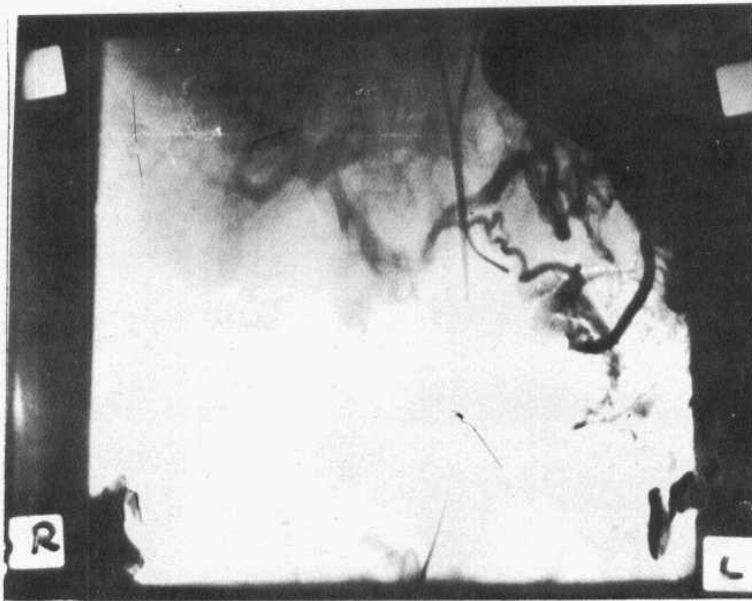


Fig. (4) Indirect portography through injection of the superior mesenteric artery shows occlusion of the portal vein confluence.



Fig. (5) Indirect splenoportography through injection of the splenic artery shows occlusion of the splenic vein with formation collaterals filling the portal vein.



Fig. (6) Coeliac arteriography shows a rounded small blush in the region of the pancreatic head consistent with insulinoma.

فحص الأوعية الدموية بالصبغة فى أورام البنكرياس

عماد ابراهيم البسيونى ، مصطفى فاضل سنبل
محمد فؤاد عبد المعطى ، ابراهيم محمود غنيم

قسم الأشعة - كلية طب الأزهر

أن أورام البنكرياس تعتبر من الأورام الخطيرة فى جسم الانسان ، وهذا البحث يهدف الى توضيح أهمية فحص شرايين وأوردة البنكرياس فى تحديد نوع الورم من حيث هل هو حميد أو خبيث ومدى انتشار الورم فى الغدة أو فى الأوعية الدموية المحيطة بها ، وخاصة فى الحالات التى لم تحدد بواسطة الوسائل الزخري - كالأشعة المحورية بالكمبيوتر .

وقد تبين من البحث أهمية فحص الأوعية الدموية فى ذلك مع الاشارة الى أن استخدام الوسائل المختلفة وخاصة الأشعة المحورية بالكمبيوتر بالاضافة الى أشعة الأوعية الدموية تعطى أعلى نسبة فى تشخيص أورام البنكرياس وتحديد نوع الورم .