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PANCREATIC BIOPSY IN A TERTIARY CARE HOSPITAL IN BENIN CITY: A FIFTEEN-YEAR HISTOPATHOLOGICAL REVIEW.

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ABSTRACT: Pancreatic lesions continue to be important causes of morbidity and mortality. The most significant disorders of the pancreas as reported in the developed world include cystic fibrosis, congenital anomalies, acute and chronic pancreatitis, pseudocysts, and neoplasms. Population distributions are mostly reported from the developed world and there is paucity of epidemiologic data on pancreatic diseases from developing countries. To determine the histopathological pattern as well as the age and sex distribution of the various lesions histopathologically diagnosed of pancreatic biopsy specimens in the University of Benin Teaching Hospital, Benin City, between January 2005 and December 2019. It was a hospital based, retrospective review of the records obtained from the archives of the Department of Pathology (Morbid Anatomy), University of Benin Teaching Hospital, Benin City, Nigeria. The reports of pancreatic biopsies received in our tertiary care centre over the 15-year study period were reviewed. Only 19 pancreatic biopsy specimens were received accounting for 0.05% of the total number of specimens received during this period. Nine (9) of them (47.4%) were from males while 10 (52.6%) were from females. The ages of the patients ranged from 6 to 71years, with a mean age of 50.3years. Eleven (11) cases were malignant neoplasms (57.9%, 10 primary, 1 metastatic), 4 were inflammatory lesions (21.1%) and 4 cases (21.1%) essentially normal pancreatic tissue. There were no benign neoplasms. Pancreatic lesions appear to be quite uncommon in our environment, with ductal adenocarcinoma being the most frequently encountered neoplasm in keeping with the global trend. The possible reasons for the low rate of pancreatic biopsy in this environment are discussed.

Keywords: Pancreatic biopsy, histopathology, Benin City.

INTRODUCTION

Pancreatic lesions continue to be important causes of morbidity and mortality. The most significant disorders of the pancreas as reported in the developed world include cystic fibrosis, congenital anomalies, acute and chronic pancreatitis, pseudocysts, and neoplasms.[1] Population distributions are mostly reported from the US, Europe, and Japan[2] and reports from Africa are rare. The annual incidence of acute pancreatitis[3-5] ranges from 13 to 45/100,000 persons, and chronic pancreatitis[5,6] from 5 to 12/100,000; the prevalence of chronic pancreatitis is about 50/100,000 persons.[2] Pseudocysts, which are very

well known to complicate pancreatitis, account for about two thirds of all pancreatic cystic lesions and complicate chronic pancreatitis in 20–40% of patients. In acute pancreatitis pseudocysts arise in 10–20% of patients.[7] Gallstone disease, which is strongly associated with obesity, and excessive consumption of alcohol are the major risk factors for benign pancreatic disease, whereas smoking is the most important factor known to cause pancreatic cancer.[8] Pancreatic cancer has a lower incidence than many other types of cancer, but is the fourth most common cause of death from cancer in the United States[2] and the sixth commonest cause of cancer death in Europe.[9] Worldwide, over 200000 people die annually of pancreatic cancer. The highest incidence and mortality rates of pancreatic cancer are found in developed countries.[9] It accounts for more than 30,000 new cases and 20,000 cancer-related deaths each year.[10] The global annual incidence rate for pancreatic cancer stands at about 8/100,000 persons.[11]

The morphological classification of primary, non-endocrine pancreatic carcinomas would pose little trouble to pathologists since most are adenocarcinomas spanning the spectrum commonly found with adenocarcinomas of other organs.[12] The endocrine tumours, which are slower-growing, make up just a small fraction of the total burden of pancreatic disease.[2, 13] Just like for most cancers, incidence rates of pancreatic cancer vary from country to country, with up to five- to seven-fold differences between countries with the lowest and highest incidence; rates reported from African countries are low because of insufficient data.[2]
There is paucity of studies on pancreatic lesions from our study area.

OBJECTIVE

This study sought to determine the histopathological pattern as well as the age and sex distribution of the various lesions histopathologically diagnosed of pancreatic biopsy specimens in the University of Benin Teaching Hospital, Benin City, between January 2005 and December 2019. It was a hospital based, retrospective review of the records obtained from the archives of the Department of Pathology (Morbid Anatomy), University of Benin Teaching Hospital, Benin City, Nigeria.

MATERIALS AND METHODS

Data regarding pancreatic biopsy specimens histologically diagnosed in the Pathology (Morbid Anatomy) Department of the University of Benin

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Teaching Hospital (UBTH), between January 2005 and December 2019, as obtained from the departmental archives, were the materials for this study. These were specimens received from the Department of General Surgery, University of Benin Teaching Hospital (UBTH), other hospitals within the Benin City metropolis and within Edo State, as well as from neighbouring states. The UBTH is the major tertiary care hospital and referral centre in the Benin metropolis, having well established general surgery and histopathology departments, and serving as catchment centre to neighbouring states.

RESULTS

During the fifteen-year period under review 19 pancreatic biopsy specimens were received in the Histopathology Laboratory of the UBTH, accounting for 0.05% of the total number of specimens received during this period. Nine (9) of them (47.4%) were from males while 10 (52.6%) were from females. The ages of the patients ranged from 6 to 71years, with a mean age of 50.3years. On the distribution of the histopathological diagnoses, 11 cases were malignant neoplasms (57.9%, 10 primary, 1 metastatic), 4 were inflammatory lesions (21.1%) and 4 cases (21.1%) essentially normal pancreatic tissue. There were no benign neoplasms. The malignant lesions were 7 cases of ductal adenocarcinoma (63.6% of malignant lesions), and a case each (9.1%) of acinar cell carcinoma, clear cell neuroendocrine carcinoma, metastatic mucinous adenocarcinoma from a rectal primary and primary leiomyosarcoma. The four cases of inflammatory lesions were a case each of acute and chronic pancreatitis, and two cases of pancreatic pseudocyst. These findings are displayed in the table below.

Pancreatic Carcinoma

There were 9 cases of primary pancreatic carcinoma seen as described above. Three of the patients were male while 6 of them were female, giving a male/female ratio of 1:2. The mean age for pancreatic carcinoma was 51.7years. Ductal adenocarcinoma was the commonest malignancy and the commonest lesion seen overall.

Table 1: Age and sex distribution of the histopathological diagnoses from the pancreatic biopsies received.

	SEX	AGE	DIAGNOSIS	
1.	F	37	Ductal adenocarcinoma	
2.	M	45	Ductal adenocarcinoma	89
3.	F	60	Ductal adenocarcinoma	
4.	F	56	Ductal adenocarcinoma	
5.	M	45	Ductal adenocarcinoma	
6.	M	59	Ductal adenocarcinoma	
7.	F	40	Ductal adenocarcinoma	
				19
8.	F	71	Acinar cell carcinoma	
9.	F	52	Clear cell neuroendocrine carcinoma	
10.	M	61	Secondary mucinous carcinoma (rectal primary)	
11.	M	52	Leiomyosarcoma	
12.	M	59	Chronic pancreatitis	
13.	M	55	Acute pancreatitis	
14.	F	6	Pancreatic pseudocyst	
15.	F	44	Pancreatic pseudocyst	
16.	M	62	Normal pancreatic tissue	
17.	M	32	Normal pancreatic tissue	
18.	F	65	Normal pancreatic tissue	
19.	F	55	Normal pancreatic tissue	

DISCUSSION

Archival records from our centre indicate that pancreatic biopsy specimens account for a very small percentage of the specimens received in our histopathology laboratory annually (0.003%). This may be due partly to the relative rarity of surgical lesions of the pancreas compared to other abdominal organs, and of pancreatic diseases for which incisional or excisional biopsy for histology is expedient for diagnosis and management. An earlier study in this centre on the pattern of malignant disease in Benin City[14] revealed that pancreatic malignancies, for instance, were relatively rare. Furthermore, data from the Benin Cancer Registry show that pancreatic cancer is not in the top 10 most frequently occurring cancers in our environment, even though it is the 5th and 7th commonest cause of cancer deaths here in males and females respectively.[15] In a 7-year retrospective study of 106 gastrointestinal malignancies in Lagos, only one case of pancreatic carcinoma was found.[16]

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Non-neoplastic disorders of the endocrine and exocrine pancreas are less likely to be indications for pancreatic biopsy than neoplasms.

Pancreatic biopsy material can be obtained by laparotomy, laparoscopy or by ultrasound guided or computerised tomography guided percutaneous sampling.[17] Only 19 pancreatic biopsy specimens were received here over a 15-year period. All the specimens received in this review were laparotomy specimens. In our resource-limited setting, just as in many areas of the developing world, laparoscopy and radiologically guided biopsy of abdominal organs are yet to become the routine, and so many pancreatic lesions would be managed without biopsy for histology. Studies in Ile-Ife, southwestern Nigeria,[18] and Calabar, southern Nigeria,[19] document challenges of the relative lack of super-specialist skill and advanced imaging techniques in the evaluation of pancreatic lesions, not to mention the prevailing economic poverty which makes even the available to be unaffordable to most patients. Late presentation with advanced disease also poses a limitation to surgical intervention, thereby limiting the availability of pancreatic biopsy material. In many centres in Nigeria, many cases of pancreatic lesions are diagnosed by a combination of clinical history, physical examination, laboratory investigations like full blood count, liver function tests and CA 19-9, ultrasonography and computed tomography/magnetic resonance imaging where available and affordable. Thus many patients are diagnosed and managed without histological confirmation, which is only sometimes done after autopsy of deceased patients.[19,20]

In this review, ductal adenocarcinoma was the commonest diagnosis from pancreatic biopsy specimens, accounting for 7 out of 19 biopsies (36.8%). It was also the commonest carcinoma (70%), while also making up 7 out of 11 malignancies (63.6%), the other four being one case each of acinar cell carcinoma, clear cell neuroendocrine carcinoma, metastatic mucinous carcinoma from a rectal primary, and leiomyosarcoma. Despite this small sample size, the predominance of ductal adenocarcinoma, as in several other studies,[10,12,13,21-24] is also reflected in this study. Morohoshi[24] and Kodama[22] reported ductal adenocarcinoma in their own studies to have accounted for as high as 81.1 and 74.5% of pancreatic cancers respectively.

Acinar cell carcinoma is relatively uncommon, although one case was found in this study. A study in Hamburg, Germany[24] reports acinar cell carcinoma to

have made up 1.1% of pancreatic cancer, while a study from the Memorial Sloan-Kettering Cancer Centre[12] in New York, United States, showed acinar cell carcinoma to comprise 1% of pancreatic cancer. One review of 94 cases of pancreatic cancer revealed no case of acinar cell carcinoma.[22] The endocrine tumours, which are slower-growing, make up just a small fraction of the total burden of pancreatic disease.[2,13] Kodama et al[22] found 3 out of 94 pancreatic carcinomas to be endocrine carcinomas. One case of clear cell neuroendocrine carcinoma was found in this study. Grosfeld et al[25] found 5 out of 7 benign paediatric pancreatic tumours to be insulinomas. There were no benign pancreatic neoplasms encountered in this study.

Primary leiomyosarcoma of the pancreas is a rare tumour, discussed in the literature mainly as case reports. A review of the cases compiled in the literature indicates that pancreatic leiomyosarcoma, like its counterpart arising in deep soft tissues, is an aggressive neoplasm characterized by short survival and a high rate of metastases.[26] One case of leiomyosarcoma was noted in this study. Pseudocysts complicate chronic pancreatitis in 20–40% of patients. In acute pancreatitis pseudocysts arise in 10–20% of patients.[7] In this study only one specimen each was diagnosed of chronic pancreatitis and acute pancreatitis, with a further two being pancreatic pseudocysts. While pancreatic neoplasms as a group may be comparatively rarer in developing areas of the world like our study area, this may not be the case for pancreatitis and its complications, which often may not require histopathology for diagnosis and treatment.

In conclusion, although the low rate of pancreatic biopsy in this environment may in part be due to the relative rarity of pancreatic neoplasms, the deficiencies, limitations and challenges with respect to radio-diagnostics and laparoscopy in this resource-limited setting are also important. Late presentation with advanced disease diagnosed by a combination of clinical history, physical examination, general laboratory investigations, imaging techniques and autopsy findings contributes to the low rate of pancreatic biopsies. There is a relative scarcity of published data on the epidemiology and morphological pattern of pancreatic lesions from this part of the world. Nonetheless, from the few biopsies seen here, ductal adenocarcinoma, just as in the literature from various parts of the world, is very much the commonest form of pancreatic neoplasia in this environment.

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