CASE REPORT

Intraductal Papillary Mucinous Neoplasm (IPMN) in association with Autosomal Dominant Polycystic Kidney Disease (ADPKD)

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ABSTRACT

Intraductal Papillary Mucinous Neoplasm (IPMN) of the pancreas in association with Autosomal Dominant Polycystic Kidney Disease (ADPKD) is extremely rare, even though 10% of ADPKD patients may develop simple pancreatic cyst. The first case report was published by Yasunori Sato from Japan in 2009. Since then less than 10 case reports are available worldwide to describe about this condition. We reported such a rare case of a 67-year-old man with ADPKD who was referred to our centre because of chronic abdominal pain and diagnosed as IPMN based on the serial imaging procedures. Despite of the high risk comorbidities, he successfully underwent pylorus preserving total pancreaticoduodenectomy with splenectomy.

Keywords: IPMN; ADPKD; Total pancreatectomy; Pancreatic cyst

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INTRODUCTION

Autosomal Dominant Polycystic Kidney Disease (ADPKD) is defined as progressively increasing number of renal cyst leading to decrease renal function. It is believed that the mutation of the specific gene of PKD1 and PKD2 causes the abnormalities[1]. It comprises of 5 to 10% of all patient with end stage renal failure.

ADPKD is known to be associated with hepatic cyst in 80% of patients and simple pancreatic cyst in very small percentage (7-10%)[1,2].Those with risk to develop simple pancreatic cyst in ADPKD is female gender, older age group and known PKD1 mutation.

Intraductal Papillary Mucinous Neoplasm (IPMN) is not uncommon as it represents 20-50% of cystic lesions of the pancreas. However the presence of IPMN in association with Autosomal Dominant Polycystic Kidney Disease (ADPKD) is extremely rare. So far no clinical studies conducted to see the association between IPMN and ADPKD as the number is too low. Only few case reports demonstrated this issue and try to hypothesize the association[2].

Challenges which were anticipated in managing such cases include the renal failure status, difficulty of mobilization due to small operative field and postoperative recovery and wound healing

CASE REPORT

A-67-year-old man was referred to hepatopancreaticobiliary unit in Toranomon Hospital with incidental finding of pancreatic cystic lesion on CT scan. He was under nephrology follow up for autosomal dominant polycystic kidney disease on regular dialysis. During the last follow up 3 months before the referral, he complaint of vague upper abdominal pain in which the primary team ordered an abdominal CT scan. He denied of any other symptoms such as jaundice, vomiting or passing malaenic stool. This patient has past medical history of hypertension and sigmoid colon resection (Hartmann procedure) for perforated sigmoid diverticulitis.

Upon examination, the abdomen was grossly distended. The abdomen was full with huge vague mass which was firm to hard in consistency but non tender (the enlarged kidneys).

Blood investigations revealed elevated carcinoembryonic antigen (CEA) of 32 ug/l (normal value less than 4ug/l) and CA 19-9 of 82 U/ml (normal value less than 40 U/ml) , however the DUPAN2 test of pancreatic cancer

marker was within normal limits (52 U/ml ; normal limits less than 81 U/ml).

The CT scan abdomen showed presence of cystic lesions at head, body and tail of pancreas with prominent main pancreatic duct measuring 2.5 mm in diameter. The intraperitoneal compartment of the abdomen was small and pushed anterior and medially by bilateral enlarged polycystic kidneys. (Figure 1 & 2)

He underwent Magnetic Resonance Cholangio Pancreaticography (MRCP) with Endoscopic Ultrasound (EUS) which showed cystic neoplasm within the pancreas communicating with the main pancreatic duct. The pancreatic fluid cytology revealed C4 lesion (most probably malignant) .He was treated as Intraductal Papillary Mucinous Cancer and planned for total pancreatectomy.

The operation was performed via upper midline incision. The challenge was to mobilize the duodenum and pancreas within the small intraperitoneal cavity. The Alexis selfretaining device was used to facilitate retraction. The tumour was nicely mobilized as it was not adhered to main structures such as superior mesenteric vessels and portal vein. Total Pancreaticoduodenectomy with splenectomy was performed.(Figure 3) The reconstruction was done as hepaticojejunostomy and gastrojejunostomy. The gerotas fascia was not open and the abdomen was successfully closed without tension.

Postoperative recovery was uneventful. He resumed orally by Day 3 and was allowed discharged by Day 7.Final Histology report was Intraductal Papillary Mucinous Carcinoma (IPMC) with positive nodal metastases.

DISCUSSION

Intraductal Papillary Mucinous Neoplasm (IPMN) is defined as an intraductal epithelial tumor composed of mucin-producing columnar cells showing papillary proliferation, cyst formation, and variable degrees of cellular atypia [2,3].

IPMNs account for 1%–3% of all exocrine pancreatic neoplasms and for 20%–50% of all cystic neoplasms of the pancreas [3].It occurs commonly in men between the ages of 50 and 60[4].There are 3 subtypes of IPMN: main duct (diffuse or segmental dilation of the main duct), branch duct (dilation of 1 or more side branches), and mixed type (both main duct and side branch involvement).By pathology, IPMN may also be classified as gastric, intestinal, or pancreaticobiliary type.

The risk of carcinoma differs from each subtype of IPMN ; the branch duct IPMN -Gastric IPMN has lowest risk (10-30% ductal adenocarcinoma risk) , the main duct IPMN -intestinal type has intermediate risk (30 -50% colloid carcinoma risk) and the main duct IPMN-pancreaticobiliary type has the highest risk (more than 50% ductal adenocarcinoma risk)[3]. Our patient belongs to pancreaticobiliary type and was histopathologically diagnosed as Intraductal Papillary Mucinous Carcinoma. The common symptoms of IPMN include steatorrhea and diabetes, most probably because of pancreatic insufficiency. 15% to 30% of IPMNs presenting with

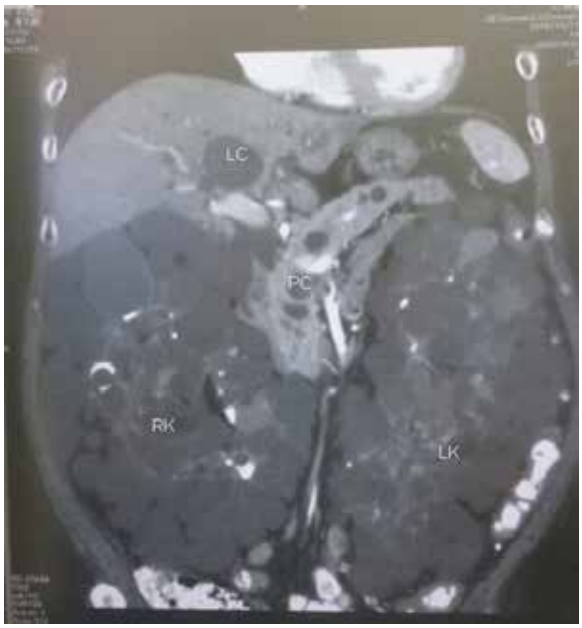

Fig. 1. CT Scan shows presence of cystic lesion of the pancreas (PC) with bilateral polycystic kidneys (RK -right kidney; LK -left kidney) and liver cyst (LC)

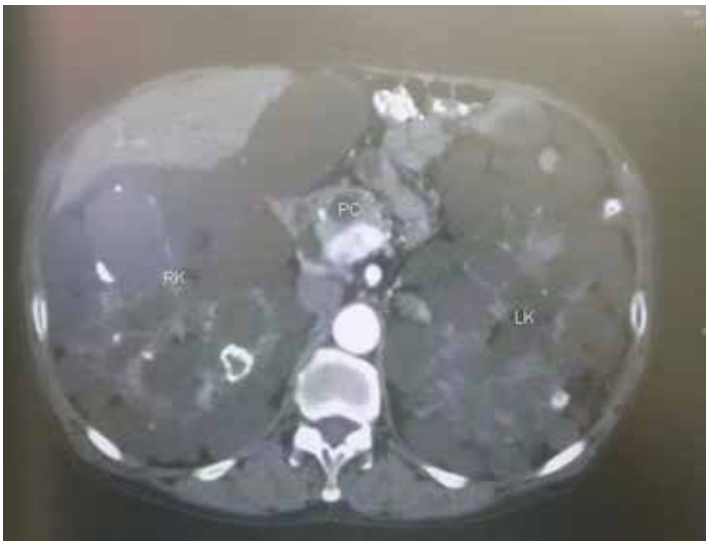

Fig. 2. CT Scan shows small abdominal compartment due to enlarged bilateral polycystic kidneys (PC -pancreatic cyst; RK -right kidney; LK -left kidney)

acute pancreatitis, due to obstruction from mucus plugging the ducts . Most patients undergo recurrent episodes of mild pancreatitis before diagnosis of IPMN[4]. Our patient main complaint was vague abdominal pain which can be also due to increasing abdominal distention as a result of ADPKD[1]. He has no diabetes or steatorrhea.

IPMN is known to be associated with other diseases such as Peutz-Jeghers syndrome and familial adenomatous polyposis[2].However only 7 cases were reported worldwide about ADPKD and cystic neoplasms of the pancreas.

Despite rarity of the correlation between ADPKD and IPMN, our patient had few common extrarenal menifestation of the disease. He had a long standing history of hypertension which can occur in more than 80% of ADPKD patient. Besides that, he had undergone sigmoid colon resection for perforated sigmoid diverticulitis. The risk of development of diverticular disease in ADPKD patients is 40% and half of them require surgical intervention because of its complications such as bleeding or perforation [1].

The other extrarenal manifestations that may need to consider for those ADPKD undergoing major surgery including cerebrovascular disease (intracranial aneurysms) cardiac (left ventricular hypertrophy, pericardial effusion and valvular diseases) and postoperative abdominal hernias[1]. These condition may predisdopose ADPKD patients to catastrophic events intra and postoperatively, thus make them clinically unfit for major surgeries.

Progression for IPMN to develop carcinoma is estimated to occur within about 5 years (2.5% risk) and increase to 20% in 10 years[3,4].

The international consensus guidelines for management of intraductal papillary mucinous neoplasm and mucinous cystic neoplasm of the pancreas established in 2006 have increased awareness and improved the management of these entities[5].The consensus is further revised after 5 years. The recent consensus in 2012 mentioned that the criteria of "high risk stigmata" will be main pancreatic duct (MPD) diameter of more than 10 mm, enhanced solid component, cyst size more than 3 cm , presence of mural nodules and positive cytology results.

This patient had a thorough investigation process to strengthen the indication for total pancreatectomy in view of his background condition. Few investigations lead to higher probability of malignant transformation, including involvement of main pancreatic duct (shown on MRCP and CT Scan) and cystic fluid analysis which reported as C4 (probable malignant).Besides that ,the other malignant risk which should be considered were age (between 60 to 70 years), gender (male predominant) and symptoms (chronic abdominal pain).

Pylorus Preserving Total Pancreatectomy was performed to this patient because of the location of the cysts which were within the entire pancreas and they were proved by cytology as Intraductal Papillary Mucinous Carcinoma (IPMC).

CONCLUSIONS

More clinical data is needed to correlate the ADPKD to IPMN. It is very important to establish proper surveillance of pancreatic cystic lesions in ADPKD because only those proven malignant transformed diseases should undergo

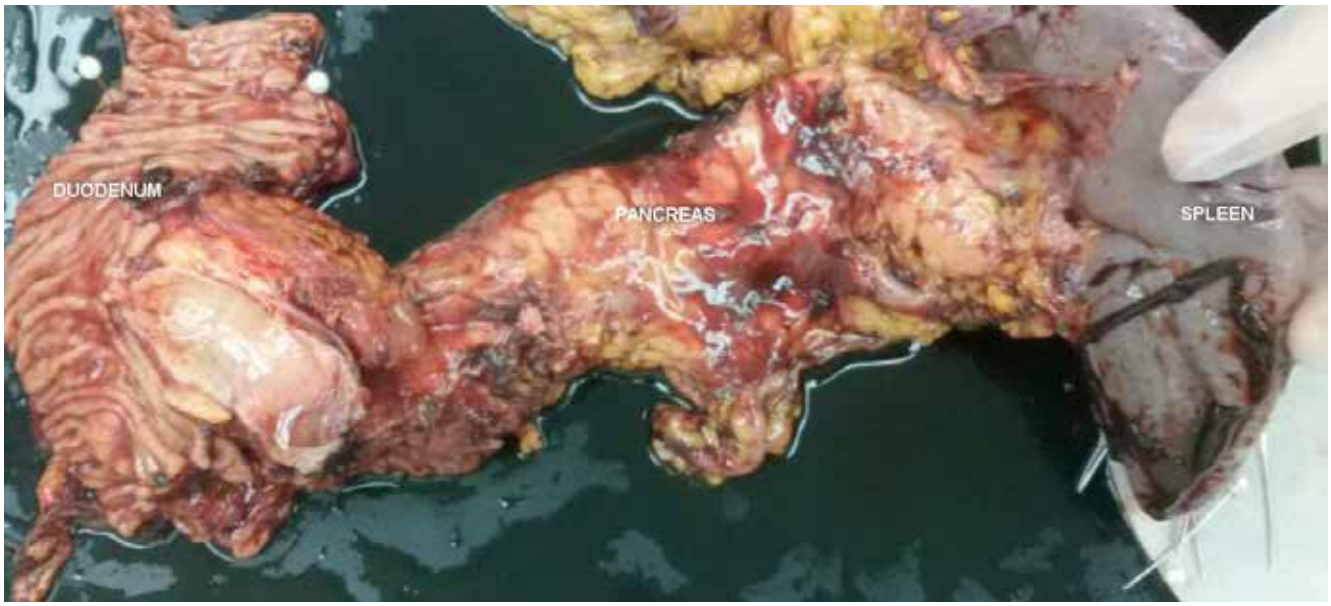

Fig. 3. Resected specimen of Total Pancreaticoduodenectomy with Splenectomy

pancreatic resection due to possible catastrophic morbidities intra and postoperatively.

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