CLINICAL CASE

CHALLENGES IN THE DIAGNOSIS AND SURGICAL MANAGEMENT OF AN UNCINATE PROCESS ADENOCARCINOMA IN A PREVIOUSLY HEALTHY YOUNG ADULT

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Abstract

Despite the increasing numbers of young adults being diagnosed with aggressive forms of pancreatic cancer, there is still insufficient data regarding the evolution patterns for early stage predictors. However, a correct and timely diagnosis is of major importance in the management and the outcome for pancreatic cancer patients.We are reporting the case of a 39 year old male who presented to the emergency department on the Easter holiday evening with visible signs of jaundice, no abdominal pain and no history of disease. The patient was admitted due to inconclusive paraclinical test results, the significantly elevated value of conjugated bilirubin being the only signaled abnormality. During the following two weeks, a number of basic and advanced imaging investigations were carried out due to insufficient information offered by the clinical and paraclinical investigations. During admission, EUS (endoscopic ultrasonography) identifies an imprecisely delimited hypoechoic mass, confirmed by MRCP (Magnetic Resonance Cholangio-Pancreatography) as an uncinate process nodule. The patient is informed about the pancreatic cancer diagnosis treatment options and prognosis. Surgical management of the uncinate process mass is decided and a Cephalic Pancreaticoduodenectomy (Traverso-Longmire) is performed with para-aortic and para-caval lymphadenectomy. The patient is discharged 17 days postoperatively, without complications; due to the histopathological diagnosis of poorly differentiated pancreatic duct adenocarcinoma, the multidisciplinary oncological meeting set the indication for combined chemotherapy and radiotherapy. Diagnosing pancreatic cancer in young adults without specific symptoms or a prior condition is a challenging task, more so with the limited resources and means of investigation in an emergency hospital. In conlusion, EUS had the highest sensibility while MRCP had the highest specificity after normal endoscopy and inconclusive abdominal ultrasonography and CT scan. Another predictor of probability for an uncinate process tumor is associated with the high-low variations of direct bilirubin levels during antispasticity medication.

Keywords*: Whipple, pancreatic cancer, uncinate process, adenocarcinoma, CBP obstruction*

Introduction

Pancreatic cancer (PC) is an agressive malignancy with a poor prognosis and is mainly caused by the abnormal multiplication of the cells in the pancreas. It is mainly known to affect people over the age of 50 and

uncommonly can affect young adults under 40 [1].

The patients with PC are diagnosed with advanced stages of malignancy due to the lack of specific symptoms in the onset of tthe disease. The main symptoms are : (1) intense and intermittent pain in the upper abdomen and back , (2) jaundice , (3) unexplained weight loss, (4) nausea and vomiting [2]. Patients can also present with symptoms of diabetic disease due to the loss of function of the pancreatic cells which produce insulin [3].

Among the risk factors, patients with a family history of PC has shown a 1 in 10 chance of developing the disease [4]. Chronic pancreatitis is also linked to pancreatic malignancy due to the constant inflammation of the parenchyma which causes abnormal cell transformations. Other risk factors include : tobacco and alcohol use, diet and lifestyle, stomach ulcers, Helycobacter Pylori infection [5].

Screening for PC is usually done for patients presenting risk factors, but many times it is discovered by 'accident' during an investigations for another medical issue. Computer tomography (CT) makes detailed cross-sectional images of the abdomen and is the best method for visualising a pancreatic mass. Thel CT protocol for PC is a multiphase CT scan and it can be coupled with a guided needle biopsy of the identified formation in the pancreas. Special types of Magnetic resonance (MRI) can be carried out for investigation of the bile ducts - MRCP (MR cholangiopancreatography) and for the vascular structure MRA (MR angiography).
Another imagistic investigation is abdominal ultrasound which has low sensibility for pancreatic tumors unlike endoscopic ultrasound (EUS) which has high specificiy and sensibility for the pancreas.

ERCP and MRCP are useful when looking for an obstruction, dilatation or narrowing of the bile and pancreatic ducts.While ERCP can also be used to place stens or biopsy any suspicious formation, MRCP is a non-invasive imaging modality which only allowes observation of the anatomical structures.

Blood tests for PC include : pancreatic and liver function asessment, tumoral markers (CA 19-9; CEA), pancreatic hormones (for pancreatic neuroendocrine tumors).

Most pancreatic cancers are located in the head of the pancreas (60-70%) while 25% are located in the body and tail of the pancreas [6].

Uncinate Process Pancreatic Cancer (UPPC) cancers are particularly rare and hard to diagnose as reported in previous studies, affecting 2.5% - 10% of the people with pancreatic malignancy [7],[8],[9]. The survival rates for these patients are also low, ranging between 5.5 to 17 months [10].

Due to the rising percentages of young patients being diagnosed with agressive forms of PC , better management protocols are necessary for timely diagnosing pancreatic malignancy in patients under the age of 40. We are reporting the case of a previously healthy 39 year old male presenting an uncinate process adenocarcinoma and the challenges in diagnosing and surgical management from a non-specialised center perspective.

Case Presentation

A 39 year old Caucasian male presented to the emergency room in evening of the Easter holiday with nausea and yellow coloration of the skin and scleras. The patient had no history of abdominal pain or digestive tract disease. There were no previous surgical interventions, he had an active lifestyle and athletic build, no recent unexplained weight loss, nausea or hyperthermic episodes.

According to the patient, the yellow coloration of the teguments became noticeable to him in the previous evening after consuming a heavier meal due to the holidays. The coloration became significantly more intense the following day and he decided to come to the emergency room.

On physical examination, the teguments and scleras showed signs of jaundice. The abdomen was soft, non-tender and no masses could be located by palpation. He had a reducible testicular hernia on the right side which posed no problems.

On admission, critically high bilirubin levels (Table 1) were the only abnormal values noted. The following days, tumoral markers were also tested with values within the range of normal reference parametres.

Tests	*Values*	*Reference parameters*
On admission		
Hemoglobin	15.20	11.0-16.5 mg/dl
Conjugated Bilirubin	9.26	0-0.3 mg/dl
Total Bilirubin	11.06	0.2-1 mg'dl
Tumoral Markers		
CA 19-9	18.65	0-36.6 U/ml
CEA	2.04	0-3 ng/ml
12 h after admission		
Conjugated Bilirubin	15.51	0-0.3 mg/dl
Total Bilirubin	17.21	0.2-1 mg/dl

Table 1 - Blood Test Results

During admission, it was noted that the patient's bilirubin levels were fluctuating even with antispasticity medication,without a specific pattern of the variations, with an average of +/- 6mg/dl.

The first investigation carried out was an abdominal ultrasound (US) whichrevealed dilation of the CBP (common bile duct) of 19.5 mm. The aspect of the other organs were normal, no signs of tumoral formations and no visible obstruction cause. Due to inconclusive US results, a superior endoscopy is performed, but no additional information is obtained.

Multiphase CT-AP is scheduled and the results are also inconclusive : bilateral dilation of the intrahepatic biliary ducts, dilated CBP with sudden decalibration at the cephalic portion of the pancreas.

EUS is then performed in hope of visualising the obstructive mass causing the jaundice and CBP decalibration. The investigation finds a 10 mm peripapilar diverticulum

The final investigation carried out in hope of gathering more specific information about the obstruction was a MRCP. Preoperative MRCP Investigation concluded in the presence of a pancreatocephalic nodule of 2.2cm/1.8 cm at the level of the posterior uncinate process which causes the sudden stenosis of the distal 2.4 cm intrapancreatic choledocus. No signs of vascular invasion.

On the 14th day of admission, a cephalic duodenectopancreatectomy (Traverso-Longmire) was performed. The peritoneal cavity was entered through a xifo-infra-umbilical incision: liver, peritoneum and omentum were inspected for signs of metastatic dissemination through visual observation and palpation. The duodenum and the cephalic portion of the pancreas were mobilized from the inferior vena cava through Kocher maneuver.

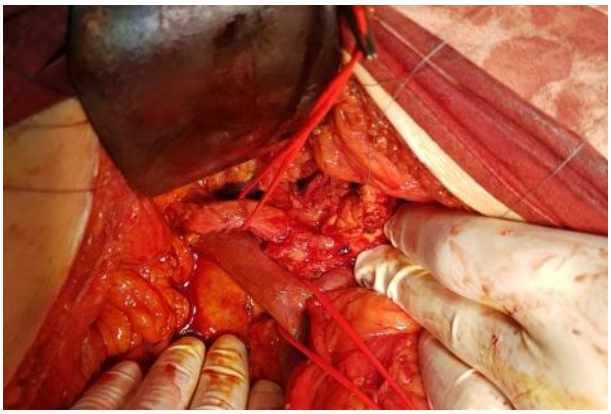

Figure 1 - Portal Vein (inferior loop) and arteria hepatica communis (upper right loop) isolation

Retropancreatic dissection is performed (artery-first technique) followed by a pylorus preserving cephalic duodenectopancreatectomy. The gallbladder was removed and the CBP (common bile duct) was sectioned; the portal vein and common hepatic artery (Figure 1) were dissected together with lymphodissection of the hepatic pedicle and celiac trunk.

The duodenum is mobilised and divided 2 cm distal to the pylorus and a gastrointestinal anastomosis is performed.

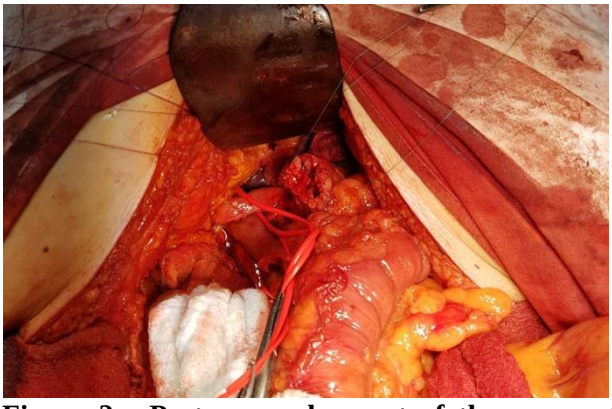

Figure 2 - Post-removal aspect of the remnant pancreatic stump

The pancreas was sectioned at the level of the isthmus (Figure 2). A duct to mucosa pancreatico-jejunoanastomosis was performed using 5/0 PDO running suture, with placement and internalisation of a 5FR stent.

The bile duct reconstruction was made by termino-lateral anastomosis of the

ductus choledocus with the jejunum with 4/0 PDO running suture. The gastro-jejunal

anastomosis of transmesocolic type was also performed.

Figure 3 - Sectioned Uncinate Process with tumoral formation visualisation.

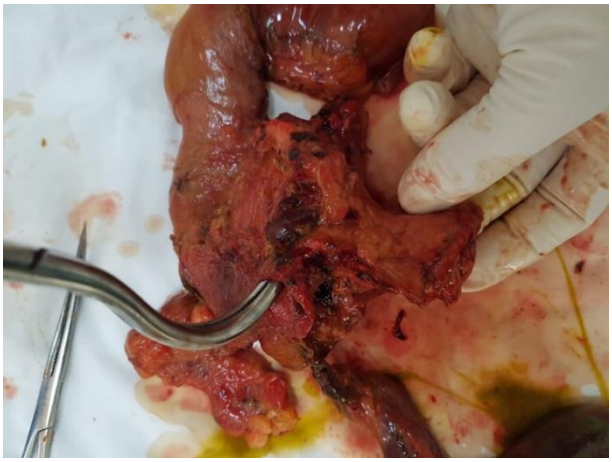

Figure 4 - Instrument tip is introduced in the stenosed portion of the distal CBP

After removal, the cephalic portion of the pancreas was inspected for better visualisation and documentation of the tumor as shown in Figure 3. The size of the tumoral formation was 1.5/2 cm, causing a stenosis in the distal CBP (Figure 4).

The HP diagnosis (Table 2) confirms the malignancy with the diagnosis of poorly differentiated pancreatic ductal adenocarcinoma, TNM staging pT3n1.

Citokeratin 7	present in tumoral cells
Citokeratin 20	positive in tumoral cells
Ki 67	positive in 70% of tumoral cells
CROMO	absent
SYN	absent

Table 2 - Histopathological results

Postoperative MRCP

Liver: absence of tumoral formations; small infrahepatic collection at the visceral margin of segments 7-8 measuring 22mm/18mm; absent gallblader (post-cholecystectomy).

Pancreas: remnant pancreas with normal contour, absence of tumoral nodules in the parenchima; small dilation of the common hepatic duct and moderate dilation of intrahepatic biliary ducts.

The patient was discharged 17 days postoperatively without any complications. The multidisciplinary board suggested a combined chemo and radiotherapy treatment (due to the young age and effectiveness of the surgical treatment) as the best chance for recurrence prevention and long term survival.

The 6 month follow-up blood tests and advanced imagistic scans (MRI) show no sign of local recurrence or metastatic disease. Tumoral markers are within normal range as well as the bilirubin levels.

Discussions

Pancreatic cancer incidence rates have been on the rise for at least a decade and is currently the third cause of oncological death[11]. Fortunately, mortality rates are decreasing due to the evolution of chemotherapy and surgical strategies [7].

Because this type of cancer is known to affect an older demographic, younger patients are oftenly misdiagnosed or overlooked. Considering most of the cases are asymptomatic until advanced stages of malignancy, it is of vital importance to take all diagnostic possibilities into consideration when dealing with patients manifesting unspecific symptoms that could be linked to PC [12].

There is insufficient information about risk factors and incidence of PC in young adults and by reporting our experience in diagnosing and managing this case, we aim to shed some light on the difficult path to diagnosing UPPC (uncinate proces pancreatic cancer) in younger pacients.

The challenges we encountered were due to the tumor location and limited resources at our non-specialised center. The patient was cooperative and agreed to undergo several imagistic procedures untill MRCP confirmed the tumoral formation.

As the only reason for admission was jaundice and nausea during the holiday season when most of the admissions are related to gastro-enterological disorders due to excessive food and alcohol ingestion, it was important to not overlook the potential risk posed by an obstruction due to malignancy.

For PC suspicion, CT is considered to be the primary imagistic tool of diagnostic, but in our case it provided insuficient information, while MRCP was the best method of investigation for diagnosing and planing the surgical strategy.

PC and especially UPPC have devastating prognostic rates and young patients with PC have worse survival expectancy than the older demographic. While diagnosing the cancer from the early onset is not generally possible due to scarce and unspecific symptoms, the rare cases in which they do manifest should be thoroughly investigated.

The best outcomes for PC patients are obtained through surgical resection [10] before the appearance of metastases therefore surgery timing is essential : the faster, the better [13].

Conclusions

EUS had the highest sensibility for uncinate process adenocarcinoma while MRCP had the highest specificity.

A predictor for a biliary obstruction of malignant origin could be represented by high-low variations of bilirubin even with antispasticity medication

Pancreatic cancer can manifest in healthy young adults without association of risk factors such as smoking,alcohol ingestion, obesity and with no previous disease or family history of cancer.

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