CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 4 (2013) 466–469

Contents lists available at SciVerse ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.elsevier.com/locate/ijscr

Surgically proved visually isoattenuating pancreatic adenocarcinoma undetected in both dynamic CT and MRI. Was blind pancreaticoduodenectomy justified?

Konstantinos Blouhos[a], Konstantinos A. Boulas[a,*], Dimitrios G. Tselios[a], Stavroula P. Katsaouni[a], Basiliki Mauroeidi[b], Anestis Hatzigeorgiadis[a]

[a] Department of General Surgery, General Hospital of Drama, Drama, Greece
[b] Department of Radiology, General Hospital of Drama, Drama, Greece

ARTICLE INFO

Article history:
Received 2 December 2012
Received in revised form 3 February 2013
Accepted 13 February 2013
Available online 24 February 2013

Keywords:
Isoattenuating pancreatic mass
Dynamic CT
Dynamic MRI
Endoscopic ultrasound
Blind pancreaticoduodenectomy

ABSTRACT

INTRODUCTION: Visually isoattenuating pancreatic adenocarcinoma is defined as a mass not directly visible on CT and recognizable only by secondary imaging signs. The frequency of isoattenuating pancreatic adenocarcinomas at dynamic-enhanced CT has been reported to range from 5.4% to 14%. Furthermore, 80% of the visually isoattenuating pancreatic adenocarcinomas are detectable in dynamic-enhanced MRI. Consequently, a pancreatic adenocarcinoma undetected in both the above imaging studies is an exceptionally rare event.
PRESENTATION OF CASE: The present report describes a case of a histologically proved 3.5 cm pancreatic adenocarcinoma undetected in both dynamic-enhanced CT and MRI. The patient presented with progressive jaundice over the preceding 20 days. Initial abdominal CT showed a dilated pancreatic and common bile duct without demonstration of a lesion responsible for the clinical and imaging findings. Additional diagnostic work-up with dynamic CT and dynamic MRI failed to reveal a definitive mass. ERCP revealed an irregular interruption of the pancreatic and distal common bile duct with upstream dilation. Blind radical pancreaticoduodenectomy was performed. Histologic examination showed a pT3pN1MO pancreatic ductal adenocarcinoma of the head/neck.
DISCUSSION: Isoattenuating pancreatic adenocarcinoma patients represent a small but meaningful subset of patients with pancreatic cancer, as they have better survival. The more favorable postsurgical survival makes it even more imperative to correctly diagnose their cases at early stages by obtaining further diagnostic work-up with dynamic pancreatic CT, dynamic MRI and endoscopic ultrasound.
CONCLUSION: When the above studies fail to unmask the lesion, blind pancreaticoduodenectomy should be based on strong clinical suspicion and secondary imaging findings.

1. Introduction

Multidetector row and dynamic dual-phase scanning have substantially improved the accuracy of CT for detection of pancreatic cancer. However, some lesions, in which the tumor attenuation is indistinguishable from the attenuation of the pancreatic parenchyma, can still escape detection.[1] The frequency of isoattenuating pancreatic adenocarcinomas at dynamic-enhanced CT among pathologically proved pancreatic cancers has been reported to range from 5.4% to 14%.[2] Furthermore, 80% of the visually isoattenuating pancreatic adenocarcinomas at CT are detectable in dynamic-enhanced MRI.[3] Consequently, a pancreatic adenocarcinoma undetected in both dynamic CT and MRI is an exceptionally rare event. Awareness and knowledge about this uncommon finding is important, as it could cause a missed or delayed diagnosis. The present report describes a case of a histologically proved isoattenuating pancreatic adenocarcinoma undetected in both dynamic-enhanced CT and MRI.

2. Presentation of case

A 62-year-old male patient referred to our surgical department owing to progressive jaundice associated with darkening of the urine and pruritus over the preceding 20 days. Direct questioning revealed a history of vague abdominal pain, anorexia and weight loss of approximately 6 kg over the last 3 months, symptoms which were attributed by the patient to exacerbation of peptic ulcer disease. There was no other previous medical history. The patient was

* Corresponding author at: Department of General Surgery, General Hospital of Drama, End of Hippokratous Street, 66100 Drama, Greece. Tel.: +30 6937265675; fax: +30 2513501559.
E-mail addresses: kostasblu@hotmail.com (K. Blouhos), katerinantwna@hotmail.com (K.A. Boulas), dimtse@hotmail.com (D.G. Tselios), skatsaouni1@yahoo.gr (S.P. Katsaouni), mavroeidi@gmail.com (B. Mauroeidi), ahatzigeorgiadis@gmail.com (A. Hatzigeorgiadis).

2210-2612
http://dx.doi.org/10.1016/j.ijscr.2013.02.010

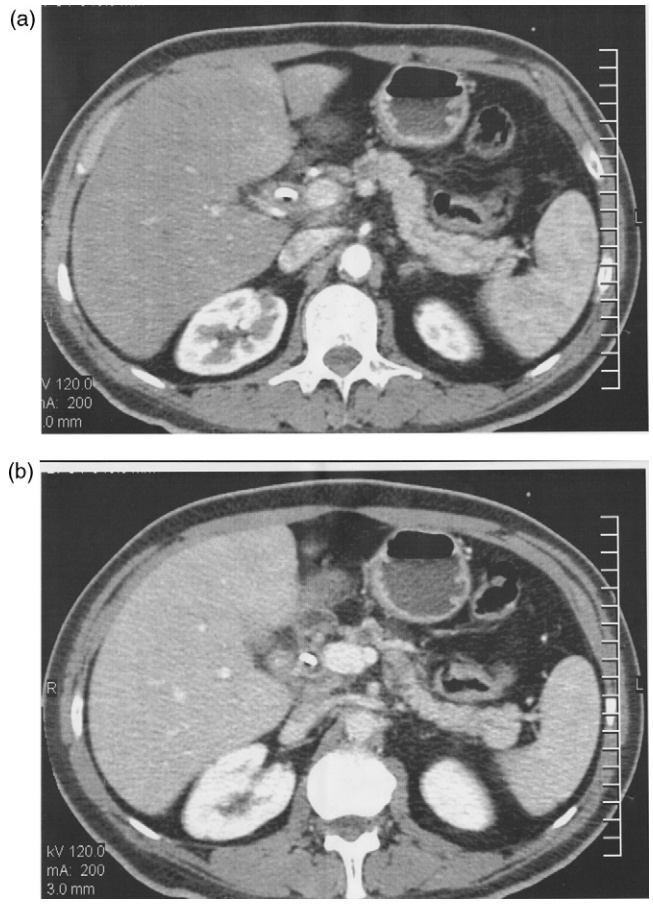

Fig. 1. Transverse contrast-enhanced (a) arterial and (b) portal phase CT images demonstrated interruption of the pancreatic duct in the neck portion, as well as upstream pancreatic duct dilatation. Images did not provide visualization of mass.

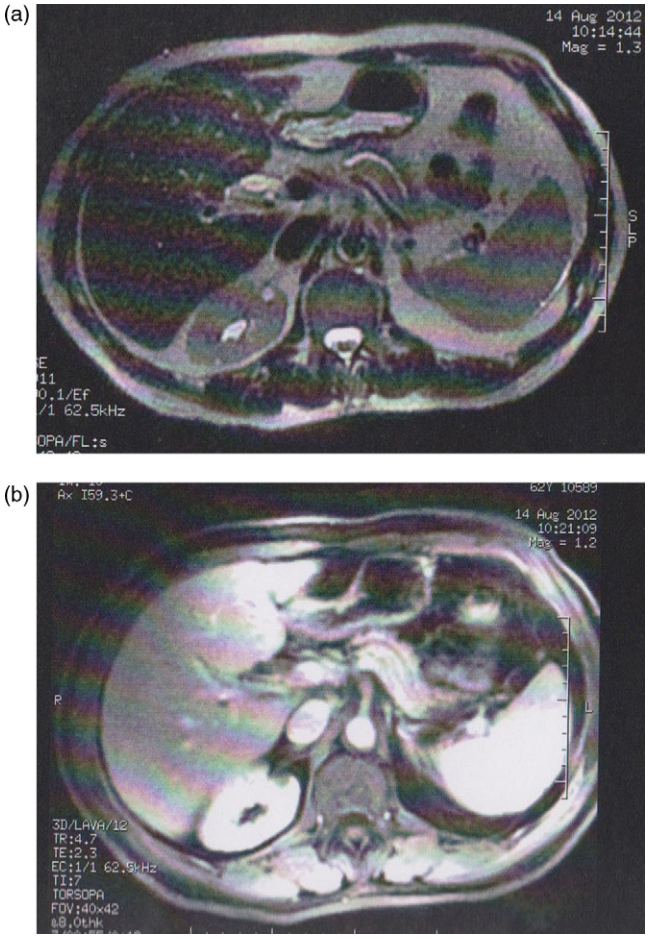

Fig. 2. Transverse (a) nonenhanced T2-weighted and (b) arterial phase contrast-enhanced T1-weighted MR images failed to expose the mass.

a smoker (15–20 cigarettes per day for the last 35 years) and an occasional alcohol drinker.

At initial presentation jaundice, palpable gallbladder and muscle wasting were present on physical examination. Laboratory studies revealed a significant increase in serum total bilirubin (12.10 mg/dl), alkaline phosphatase (271 U/l) and γ-glutamyl transferase (85 U/l). Serum amylase (40 U/l), IgG (982 mg/dl) and IgG4 (56 mg/dl) levels were normal. Regarding tumor markers, level of CA 19-9 (60 U/ml) was elevated.

Transabdominal ultrasonography showed a dilated pancreatic duct (5 mm), dilated intrahepatic and extrahepatic bile ducts (common hepatic and bile duct ranged between 12.2 and 14.3 mm in diameter) without gallstones and focal hepatic or pancreatic lesions. Initial abdominal CT demonstrated interruption of pancreatic duct in the head/neck of pancreas with upstream pancreatic ductal dilation and biliary dilation, without any visible mass or nodule. Diagnostic ERCP also performed and depicted an irregular interruption of the pancreatic duct and narrowing in the distal common bile duct with upstream dilation; a plastic stent was placed across the biliary obstruction. Strong clinical suspicion and secondary imaging signs for pancreatic head cancer imposed additional diagnostic work-up. A dynamic-enhanced pancreatic CT examination obtained with a 16-multidetector row scanner according to a dual-phase pancreatic protocol in order to depict a definitive mass. However, no pancreatic lesion of increased or decreased attenuation compared with the normal pancreatic parenchyma was observed in both arterial and portal phases (Fig. 1). Furthermore, gadolinium-enhanced dynamic MRI examination with nonenhanced fat-saturated T1-/T2-weighted and contrast-enhanced arterial, venous and delayed phase fat-saturated T1-weighted images obtained, in order to expose the mass. Neither of these sequences achieved to demonstrate the lesion (Fig. 2). No evidence of metastatic disease and invasion into local structures was depicted.

Although preoperative imaging did not reveal a definitive mass, resection of the presumed pancreatic carcinoma was decided 9 days after presentation. The decision/making flow chart of the study patient is presented in Table 1.[13] Radical pancreaticoduodenectomy was performed (standard resection plus distal gastrectomy and retroperitoneal lymph node dissection extending from the right renal hilum to the left lateral border of the aorta and from the portal vein to the inferior mesenteric artery) with Roux-en-Y reconstruction. In the surgical specimen the suspected mass appeared inconspicuous and permeated into the pancreatic parenchyma with indistinct margins and was recognizable only by its very hard consistency on palpation at the neck of the pancreas. Histologic examination showed a moderate differentiated, pT3pN1MO and stage IIB according to the AJCC cancer staging manual, negative margin pancreatic ductal adenocarcinoma of the head/neck. Postoperative course of the patient was uneventful and adjuvant interferon-based chemoradiation was performed.

3. Discussion

Visually isoattenuating pancreatic adenocarcinoma is defined as a mass not directly visible on CT and recognizable only by secondary imaging signs, when both of the following criteria are fulfilled: (a)