

Bulging Duodenal Papilla

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Abstract

Having a long differential list, benign or malignant, we tried to explain the importance of cross-sectional imaging in reliable the underlying cause of the condition of bulging duodenal papilla. Well-established diagnostic patterns can lead to a confident and sure diagnosis, avoiding invasive and surgical intervention and giving adequate therapy to the patient.

Keywords: Duodenum; Papilla; Vater; Inflammation.

Introduction

The major duodenal papilla is an anatomically complex and functional region where the pancreatic duct (PD) and the bile duct (BD) enter the duodenum through Ampulla of Vater (AoV) as a common channel. Bulging papilla has a long differential as ampullary and periampullary benign and malignant conditions, papillitis, pancreatitis, diverticulum, and impacted stones causing different morphologic changes as mural wall thickening and constricted attenuation pattern using diagnostic tools. Also, it can be seen in healthy individuals. Del Valle first described the pathology of the AoV in 1926, interpreting it as a benign inflammatory and fibrous process.¹

Our aim was to emphasize the importance of multimodality imaging in obtaining a correct diagnosis with the purpose of adequate treatment and postponement of surgical procedure w.

Case Report

We present a male patient with abdominal pain followed by nausea and vomiting after a pizza meal. The urine was darkly discolored with skin jaundice. Ultrasonographic (US) examination showed gall bladder stones and a suspected impacted one in the distal choledochal segment. Laboratory data suggested increased values of liver transaminases, biliary obstructive and inflammatory parameters, and an elevated 19-9 tumor marker of 230 (range: up to 37 U/ml).

Multidetector computed tomography (MDCT) and magnetic resonance imaging (MRI) with cholangiopancreatography (MRCP) were performed presenting the inconsistency in reporting [Figure 1]. While MDCT presented less vascularized soft tissue mass which potentially indicates hypovascular tumorous lesion (the most common representative pattern for malignant lesion described on MDCT), MR was declared most likely as extensive edema without soft tissue component (no MRI signs for restrictive diffusion which potentially excluded hypercellularity).

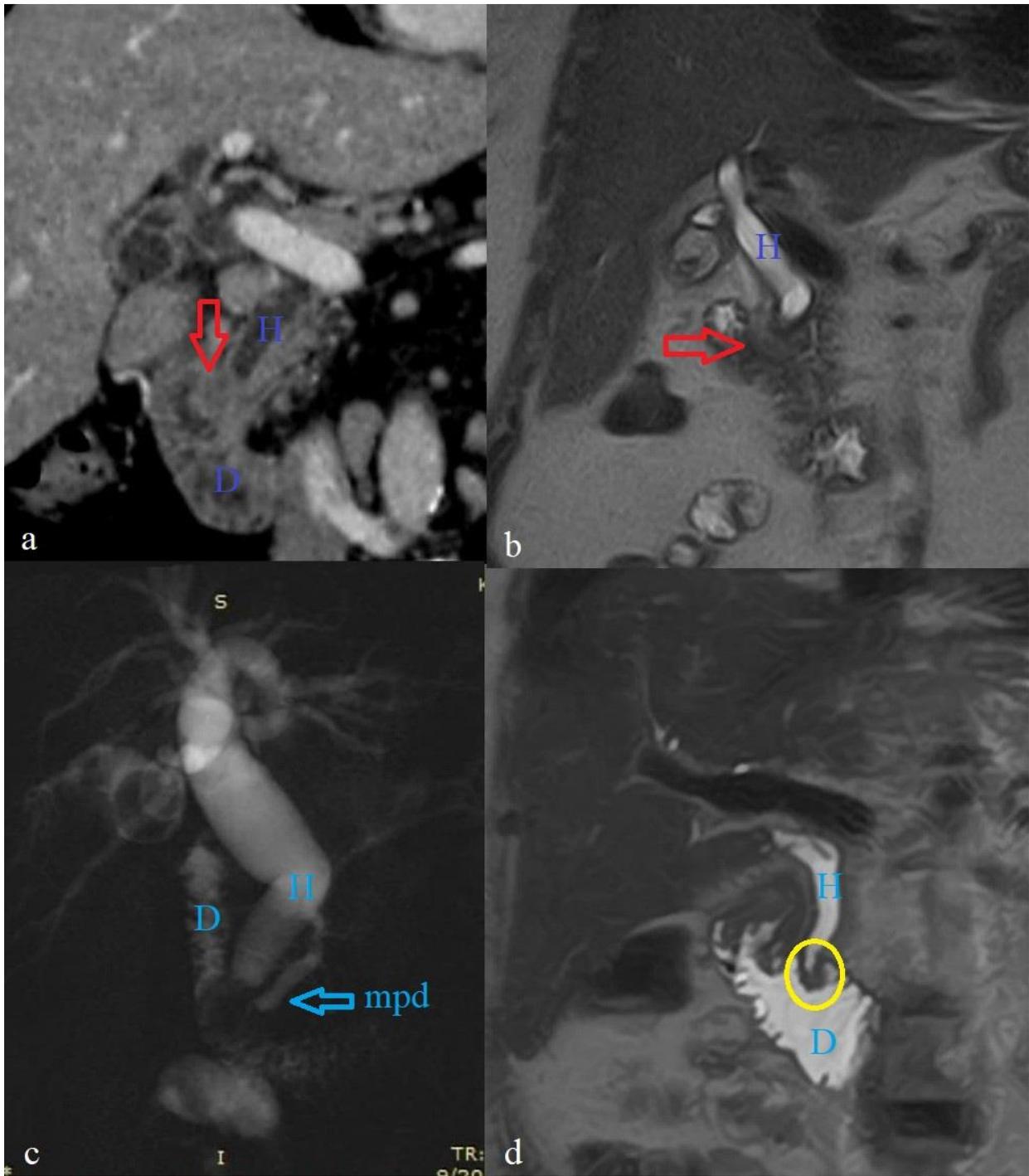


Figure 1: Multimodality imaging: MDCT (a), MR (b,d) and MRCP (c) coronal and semi-coronal images. a) hypovascular tumorous like ill-defined zone (red arrow) in the papillary region with choledochal dilatation (H) and normal duodenal lumen (D); b) edematous well-defined zone (red arrow) with no hypercellularity, but with upstream choledochal dilatation (H); c) choledochal dilatation (H) and accented main pancreatic duct (mpd); d) after stone removing, papillary region showed downsizing in suspected zone with fibrotic tissue forming without focal mass within.

The patient underwent endoscopic retrograde cholangiopancreatography (ERCP) for diagnostic and eventually therapeutic approach to obstructive jaundice. The duodenal papilla remained edematous with a protruding configuration and hyperemic changes at the orifice. Deep endoscopic cannulation was done with sphincterotomy for stone extraction and effective bile drainage, as well as ampullary biopsy as commonly performed procedure to evaluate suspected tumors and immunohistological staining for inflammatory diseases. After the procedure, the patient's jaundice improved.

Discussion

Obstructive jaundice is one of the most common symptoms which can be caused by both benign and malignant hepato-biliary-pancreatic conditions. The carbohydrate antigen (CA) 19-9 is a tumor-associated antigen (better known as a marker) that is often upregulated in malignant obstructive jaundice, but however, the elevation of CA 19-9 can be disturbed more often by malignant obstructive process as well as biliary inflammation.^{2,3} Literature says that in up to 90% pancreatic-biliary adenocarcinoma has increasing values of CA 19-9 often followed by the increased values of total and direct bilirubin and alkaline phosphatase.⁴ Accurate differential diagnosis of obstructive jaundice is of great clinical importance.⁵

There are many reasons that could cause the obstruction of the ampullary region, but we will focus on the papillary enlargement. In the setting can be papillitis, periampullary and ampullary cancer, pancreatitis, and choledochocoele.^{1,6} Very often is very difficult to identify the development when there is only enlarging duodenal papilla without obvious lesions in the neighboring organization which include periampullary fat and pancreatic glandular tissue and duodenal wall. From the literature on Pub Med, we have found 27 reports including the entities as bulging duodenal papilla.

MDCT is one of the most widely used non-invasive imaging methods for making the difference between benign and malignant bulging papillas.⁶ With the widespread use of various imaging modalities, the enlargement of the major duodenal papilla is increasingly being detected at MDCT. Lobular masses, dilatation of the common bile duct, PD, intra- and extrahepatic bile duct, and so on were reported as meaningful indications.⁷ Having that in mind, MDCT images present target-like, homogenous contrast enhancement in the case of benign conditions, whereas a polypoid and asymmetric hypoattenuating mass with infiltrating borders indicates a malignant condition. In the last state, the major duodenal papilla typically presents as a hypoattenuating mass with enhancement on arterial and portal phases at MDCT with lobulated borders and infiltrating presentation.⁸ The size of papilla and/or papillary mass was reported as the only independent variable to differentiate ampullary tumors from benign papillary stricture based on MDCT imaging.⁹ The size of the mass and irregular shape were described as the valuable independent variable to differentiate ampullary tumors from benign papillary stricture.¹⁰

MRI with MRCP may be equivalent to MDCT for identifying a bulging papilla and superior for distinguishing the underlying cause which is a crucial fact. Malignant papillary carcinomas often present as small lesions when diagnosed because of the relatively early onset of symptoms, which may be difficult to distinguish from other causes due to not being evident in images.¹¹ The enlargement of the major duodenal papillary caused by benign edematous thickening at the ampulla of Vater could present wall thickening and more intense enhancement than typical papillary region which can be markedly noted on MRI.¹²

Familiarity with ampullary pathologic conditions and pitfalls, as well as the use of optimized MDCT and MRI techniques, may improve the diagnostic accuracy of radiologists facing ampullary abnormalities.

ERCP is the gold standard for identifying the pathologic conditions for a definitive diagnosis which needs to be proven on the pathohistological examination.^{10,13} MRI and endoscopic ultrasound (EUS) are equally accurate diagnostic tests, while ERCP is a therapeutic procedure reserved for patients with a high probability of intervention requiring deep cannulation.¹⁴ Biliary stones are the main indication for ERCP, followed by benign stricture. Most studies reported similar efficacy of therapeutic ERCP in patients over 80 years with a low rate of

postprocedural pancreatitis occurring in 3-15% of cases, compared with younger patients, and good response after cannulation in terms of fibrosis.¹⁵

Conclusion

The purpose of this case was to emphasize the importance of both cross-sectional imaging (MDCT and MRI) in assuming the underlying cause in terms of bulging duodenal papilla. Well established diagnostic parameters can lead to certain diagnosis with great certainty. In this way, possible invasive procedures can be avoided and proper therapy to the patient can be given.

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