Management of Pseudopancreatic Cysts

Essay

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List of Abbreviations

3D.....Three dimensional.
ALT .....Alanine aminotransferase
ANP .....Acute Necrotizing Pancreatitis
AP .....Acute Pancreatitis
AST.....Aspartate Aminotransferase
BUN .....Blood Urea Nitrogen
CBDS.....Common Bile Duct Stone
CECT.....Contrast-Enhanced Computed Tomography
CGRP .....Calcitunime gene-related pepetide
CT Scan...Computed Tomography Scan
ERCP.....Endoscopic Retrograde Cholangiopancreato-graphy
ES.....Endoscopic Sphincterotomy
EUS.....Endoscopic ultrasonography
IVC .....Inferior vena cave
MDCT .....Multidetector computerized tomography
MR.....Magnetic resonance
MRCP.....Magnetic resonance cholangiopancreatography
MRI .....Magnetic Resonance Imaging
SOD .....Sphincter of Oddi Dysfunction
US.....Ultrasound
VIP.....Vasoactive intestinal peptide
WBC .....White Blood Cell

List of Figures

Contents

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Introduction

Most cystic masses of the pancreas encountered in clinical practice are post inflammatory pseudocysts. Pancreatic pseudocysts are defined as localized amylase –rich fluid collections located within the pancreatic tissue or adjacent to the pancreas and surrounded by a wall that does not possess an epithelial lining. (Balthazar et al., 1985 & Bradly, 1993)

They develop most often as a complication of acute or chronic pancreatitis and may develop secondary to pancreatic trauma or surgery. (Ranson, 1982)

Although the clinical, radiological and pathological features of cystic pancreatic lesions are well known preoperative diagnosis is difficult. Careful evaluation of the patient's clinical history is important for accurate diagnosis of a pseudocyst. Clinical scenarios include a psuedocyst developing after acute pancreatitis and a pseudocyst superimposed on chronic pancreatitis. (Kim et al., 2005)

However, a pseudocyst in a patient with no clinical history of pancreatitis posses a diagnostic problem. Definitive diagnosis is often possible when the lesion has a typical radiologic appearance, but in many cases characterization with imaging alone is impossible (Kim et al., 2005).

Thin section computed tomography with Multiplanar reformation, magnetic resonance, cholangio pancreatography and endoscopic ultrasonography have emerged as modalities that can provide additional diagnostic information (Kim et al., 2005).

Familiarity with the range of imaging appearances and awareness of the diagnostic strengths and limitations of each imaging modality are important for accurate diagnosis and management of cystic pancreatic lesions. (Kim et al., 2005)

Pancreatic pseudocysts can be drained by surgical, radiological or endoscopic means. The latter is a relatively simple, minimally invasive approach that can ob-

viate the need for surgical exploration or percutaneous drainage and is the modality of choice to drain pseudocysts in close proximity to the stomach and duodenum. (Giovannini et al., 1998 & Wiersema et al., 2001).

Aim of work

The aim of this work is to discuss the diagnosis and the various modalities of treatment of pseudo-pancreatic cysts.

Embryology of the Pancreas

Development of the pancreas:

The pancreas is of endodermal origin and develops from ventral and dorsal pancreatic buds, the ventral bud arises from the hepatic diverticulum, and the dorsal bud arises from the developing duodenum. (Mulholland, et al., 2006)

At stage 5 weeks differential growth of the wall of the duodenum results in movement of the ventral pancreatic bud and the bile duct to the right side and ultimately to a dorsal position. It is not clear whether there is a corresponding shift of mesenchyme during this rotation; however, the ventral pancreatic bud and the bile duct rotate from a position within the ventral mesogastrium (ventral mesodudenum) to one in the dorsal mesogastrium (dorsal mesodudenum) which is destined to become fixed onto the posterior abdominal wall (Williams, et al., 1995) (Fig. 1)

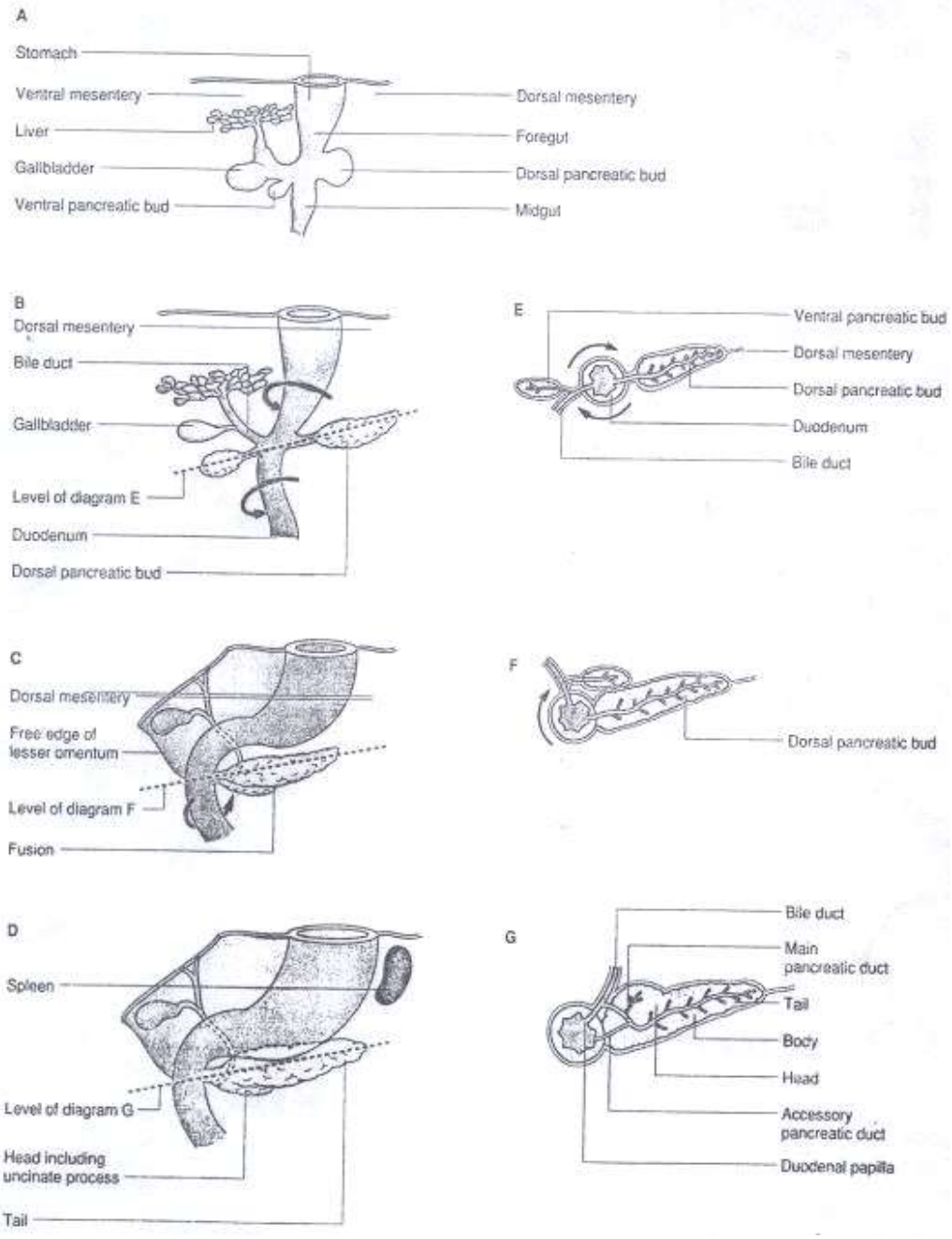

Figure 1: Successive stages in the development of the pancreas transverse sections through the duodenum and the developing pancreas (Mulholland, et al., 2006).

The duodenal wall grows asymmetrically; the opening of the two ducts (the duct of the ventral bud and the duct of the dorsal bud), originally diametrically opposite, are thus carried around into line with each other, and the two parts of the gland fuse into the single adult pancreas. The duct systems of the two buds anastomose and there is eventually some interchange of drainage areas. The end result is that the duodenal end of the dorsal duct becomes the accessory pancreatic duct, and the duct of the ventral bud joins with the remainder of the dorsal duct to form the main pancreatic duct (McMinn, 1994).

During the shift of the ventral bud, the superior mesenteric vessels, which are extending from, the abdominal aorta, become trapped between the head and uncinate process of the pancreas. Initially the body of the pancreas extends into the dorsal mesogatrium and then cranially into the dorsal mesogastrium. As the stomach rotates, this portion of the dorsal mesogastrium is directed to the left forming the posterior wall of the

lesser sac. The posterior layer of this portion of dorsal wall (peritoneum) and the pancreas becomes mainly retroperitoneal. (Williams, et al., 2005)

Congenital Disorders Resulting from Disorders and Abnormalities in the Rotation or Fusion of the Developing Pancreas

Annular Pancreas:

Thin band of normal pancreatic parenchyma surrounds, the second portion of the duodenum in continuity with the head of the pancreas causing variable degrees of duodenal stenosis. This thin band frequently carries a pancreatic duct remnant; thus, its division can often create an unwarranted fistula or pancreatitis due to ductal obstruction (Jamieson & Sarr, 2006)

Pancreas Divisum:

This results from an incomplete fusion of the ventral pancreatic duct with the dorsal duct during fetal development and is present in 10%-12% of patients. In this anomaly, the lesser duct drains the entire pancreas;

inadequacy of this pattern of drainage can result in pancreatitis and chronic pain (Glasby, et al., 1998).

Ectropic Pancreatic tissue:

Functional pancreatic tissue may be found in different ectopic locations such as stomach, duodenal wall, ileum, umbilicus, and even colon, appendix, or gallbladder (Mulhlland, et al., 2006).