Heterotopic Pancreas In Gall Bladder Associated With Chronic Cholecystitis- Is A Rare Combination

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Abstract- Pancreatic heterotopia is a rare pathologic entity, previously reported in the stomach, duodenum & jejunum .The placement of ectopic pancreatic tissue in an organ outside the pancreas known as heterotopic pancreas. It is an embryological abnormality. Pancreatic heterotopia is discovered incidentally in 2% of autopsies .The etiology of ectopic pancreatic tissue is not yet clear. It is mostly asymptomatic & rarely gives rise to complications. Histologically identified outside the normal tissue without any anatomical, vascular or neural connection with the gland. Ectopic pancreatic tissue is most commonly seen in the stomach & duodenum, GB is a very rare location. We report here, a case of pancreatic heterotopia of the GB in an 45year old female, suffering with right upper quadrant abdominal pain with a clinical diagnosis of chronic cholecystitis.

Index Terms- Ectopic , Pancreas, Gallbladder, Cholecystitis, Heterotopia.

I. Introduction

Ectopic pancreas is an abnormality of embryological origin & is defined as the presence of pancreatic tissue histologically identified outside the usual anatomic site without any anatomical, vascular, or neural connection with the gland . Ectopic pancreas on the wall of the gallbladder is very rare . The first ectopic pancreatic tissue was described in 1729 by Jean Schultz in the ileal diverticulum & Klob first confirmed its histopathology in 1859 [1, 2, 3, 4]. Otschkin, in 1916, published the first case of pancreatic heterotopia localised in the GB , & since then, only 34 cases of HP in the GB have been reported in a review of the literature [1,2]. The incidence of pancreatic heterotopia generally ranges from 0.55% to 13.7% in autopsy series & 0.2% in laparotomy [1, 2, 4, 5, 6]. Few cases have been reported regarding the presence of ectopic pancreas in the gallbladder, most of them being an incidental finding after cholecystectomy for cholecystitis [6].
In this article, we report a case of heterotopic pancreas of the Gall bladder associated with chronic cholecystitis.

II. Case Report

A 45-Year old male presented to the department of General Surgery, Era medical college and Hospital, lucknow . *Our patient presented with* history of mild yellowish discoloration of the sclera & skin. On physical examination tenderness was noted in the right upper abdomen, no rebound tenderness was present, no medical or surgical history was present.

Diagnostic assessment*: Laboratory results showed* alkaline phosphatase , 106 U/L (40-129 U/L); γ-glutamyl transferase , 56 U/L (8-61 U/L); total bilirubin,19.0 μmol/L (0-18.1 μmol/L); & bilirubin, 7.4 μmol/L (0-7 μmol/L) in patient's serum . Serum amylase level was 94 U/L (normal range: 28-100 U/L). Serum lipase was 34 U/L (normal range: 13-60 U/L).

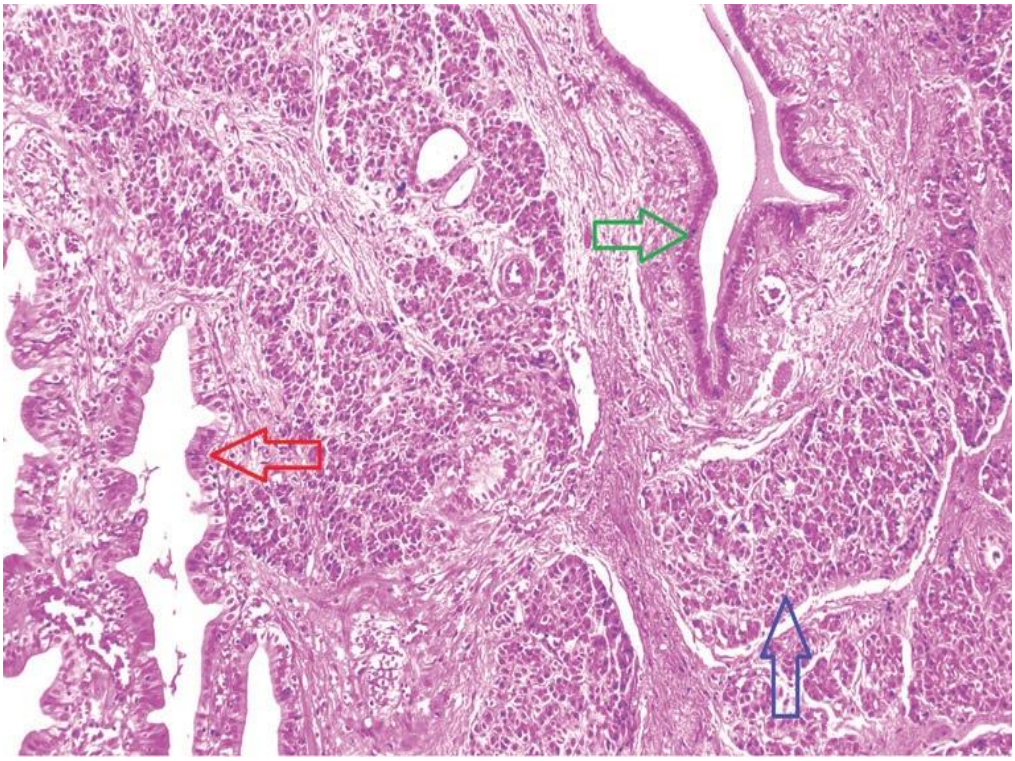
Abdominal ultrasound revealed multiple very small stones present in the lumen & minimal edema . A preoperative diagnosis of chronic cholecystitis was done.

III. Discussion

The ectopic pancreatic tissue commonly found in the stomach, (25-40%) duodenum(30%), jejunum(15%) & spleen; it is very rarely found in the ileum, liver, gallbladder, bile ducts, mesentery, lungs, &fallopian tubes [1,2,5 ,6,7]. Nearly 90% of the cases are located in the upper G.I.T [2]. In the ileum, the ectopic pancreas usually associated with Meckel's diverticulum , intestinal obstruction, or intussusception [7]. Only 34 cases of ectopic pancreas in the GB have been reported till now [5].

A review of 212 cases of ectopic pancreatic tissue in the Mayo Clinic found only one case in the gallbladder [8]. Ectopic pancreas can be diagnosed at all ages, although more frequent in male; however, a higher incidence of ectopic pancreas in the gallbladder is found in female [3]. Can occur in all age groups, but 50% of cases are found between the fourth and sixth decades of life [7, 8]. The embryologic basis of HP is unknown, but the theory of misplacement describes pancreatic tissue is deposited in developing areas of the GIT. Two additional theories are described in the literature [4,9.]

The misplacement theory proposed that during rotation of the foregut, several elements of the primitive pancreas become separated & eventually form mature pancreatic tissue along the length of the GI tract & **The metaplasia theory** proposed that EP arises from areas of pancreatic metaplasia of the endoderm which migrate to the sub-mucosa during embryogenesis.



H&E Stain, 10X sowing: Surface epithelium of GB (red arrow), Pancreatic acini (blue arrow) , Pancreatic duct(green arrow).

Histologically, both exocrine & endocrine components of the pancreas can be found in pancreatic heterotopic sites, including full differentiation of the islet in one-third of cases [1, 2, 3, 6]. The most common symptoms include epigastric pain (78%), abdominal distension (32%), melena (25%), & vomiting (16%) [6]. Symptomatic lesions generally have a size greater than 1.5 cm [6]. Patients with ectopic pancreas may present with clinical symptoms of acute pancreatitis, peritonitis, cholecystitis etc [9]. Abdominal pain explained by inflammation of perilesional secondary tissue hormone & pancreatic enzyme secretion [6].

Soto et al. found high levels of amylase & lipase in bile. o pancreatic ectopic tissue present in the gallbladder. They proposed that exocrine activity might be associated with acute or chronic cholecystitis & the development of malignant lesions in the biliary tract [6]. Imaging studies used to evaluate the GB, such as USG, CT scan & MRI, usually cannot aid in the diagnosis of ectopic pancreas in the gallbladder, & the diagnosis is usually made on the basis of the findings on histopathological analysis [1, 2, 7, 9]. Lesions are macroscopically firm & round, with a size ranging from a few millimeters to centimeters [6].50% of ectopic pancreatic tissue is found in the colon & gallbladder & can be located in the mucosa, muscularis propria/serosa [3]. Microscopic examination can identify the presence of pancreatic tissue and classify it based on the modified Von Heinrich classification, as follows [6, 7, 9,].

Type I: Pancreatic acini with tissue, ducts, islets, and pancreatic gland.

Type II: Canalicular variant pancreatic ducts.

Type III: Exocrine pancreas with acinar tissue.

Type IV: Endocrine pancreas with islet cells.

In most cases, surgery is the treatment of choice not only for the presence of symptoms, but also for purposes of diagnosis & exclusion of malignancies [1,6].

IV. Histopathology and Diagnosis

***Macroscopic* examination**: Gallbladder measuring 76 mm x 24 mm. The wall thickness was 2.8 mm. Outer surface is grey white , cut surface showed focal ulceration & a single solid , whitish, nodule measuring 5.8 mm in the neck region. Thick bile & multiple tiny stones were present in the lumen. Multiple representative sections were submitted for analysis.

Microscopic examination: Sections from the tissue showed mucosa lined by tall columnar epithelium with basally placed nuclei & eosinophilic cytoplasm . Lamina propria showed foamy macrophages, underlying muscularis propria infiltrates by chronic inflammatory cells predominantly lymphocytes & plasma cells. Few congested blood vessels are also seen. Focal area showed well-circumscribed , aberrant pancreatic tissue consisting of acini & ducts forming lobules, these lobules are seperated by thin septa. The acini composed of cluster of duct cells with apex projecting towards the lumen, these cells having bacelly located nuclei &basophilic granular cytoplasm. The ducts are lined by cuboidal epithelium. Our case was classified as type III according to the modified von Heinrich classification of ectopic pancreas . No evidence of dysplasia or malignancy was found in the sections examined.

V. Conclusion

Pancreatic heterotopia is a very rare entity, when it is located in the gallbladder wall. But with the potential to cause severe

symptoms sometimes attributed to idiopathic causes. Heterotopic pancreas can be mimic a tumor & lead to over diagnosis of malignancy. Pathologists should be familiar with this rare, incidental finding. A careful examination is needed to rule out potential complications & wrong diagnosis.

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