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Case Report

Radiology Section

Invasive Intracholecystic Papillary Neoplasm of Gall Bladder with Perforation: A Case Report

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ABSTRACT

Primary Gall Bladder (GB) carcinoma ranks globally as the sixth most common malignancy of gastrointestinal cancers and most common malignancy of biliary tract. Intracystic Papillary Neoplasm of GB (ICPN) is a subtype carcinoma of Intraductal Papillary Carcinoma of Bile duct (IPCB) and grows submucosally. Here the authors report a rare case of 58-years-old male patient, who came with the complaints of acute sharp pain in right upper quadrant and intermittent bilious vomiting. On examination, patient had right upper quadrant tenderness. He was diagnosed with moderately differentiated invasive ICPN of GB presenting as acute abdomen with right hypochondrial pain mimicking acute cholecystitis. On imaging, there was presence of gallbladder wall thickening with pericholecystic fluid collection suggestive of GB perforation. The patient also had incidental finding of congenital non rotation of gut. Intraoperatively, there was polypoidal lesion in GB with perforation of GB. Histopathology was reported as invasive ICPN and to the best of our knowledge, invasive ICPN presenting as acute abdomen with GB perforation is not reported in the literature.

Keywords: Cholecystitis, Computed tomography, Histopathology

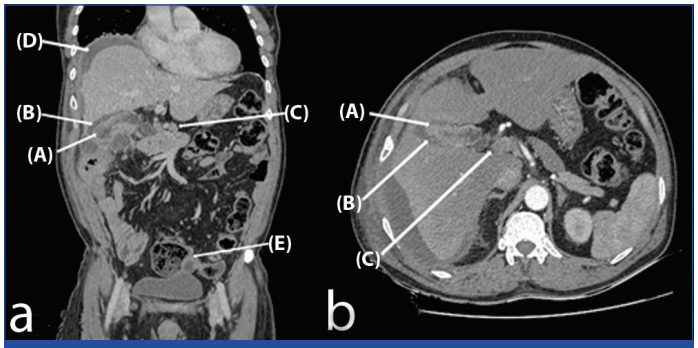
CASE REPORT

A 58-year-old male patient came with complaints of localised, non radiating, progressive acute sharp pain in the right upper quadrant for three days and intermittent bilious vomiting (four episodes) for two days. On examination, patient was afebrile and was having right upper quadrant tenderness, guarding and rigidity with no external skin changes. Other systemic examination was normal. No clinical features of obstructive jaundice were noted with negative family history of malignancy.

Blood investigations showed raised lymphocyte count, deranged liver function (LFT) and renal function tests (KFT). Deranged LFT indicating conjugated hyperbilirubinemia, hypertriglyceridemia, raised Aspartate Aminotransferase (AST) (42 IU/L) and Gamma-Glutamyl Transferase (GGT) (80 U/L) was noted. Fasting glucose level showed an increased value 121 mg/dL indicating hyperglycaemia. Urine analysis revealed no abnormality. Initial ultrasonogram was done which showed GB wall thickening with pericholecystic fluid and in view of acute pain abdomen, a possibility of acute acalculous cholecystitis with perforation was suspected.

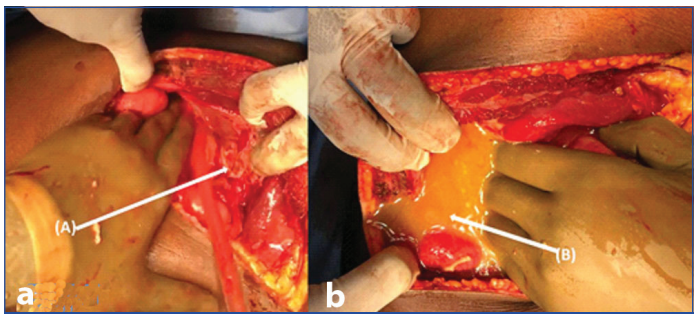
Patient was then subjected to contrast Computed Tomography (CT)-Abdomen [Table/Fig-1a,b] which showed thickened irregular enhancing GB wall with small polypoidal areas. There was both arterial and venous phase enhancement of the wall suggesting hypervascularity. Associated sub-hepatic and pericholecystic collections were noted. Few discrete enlarged lymph nodes were seen in porta and peripancreatic location. In addition, findings of congenital non rotation of gut with centrally placed caecum, duodenojejunal flexure on right side and reversal of superior mesenteric artery and vein axis was noted. Possibility of acute acalculus cholecystitis with perforation was raised with suspicion of GB Carcinoma, in view of thickened irregular enhancing GB wall and presence of adjacent lymph nodes [Table/Fig-1], although GB carcinoma with perforation presenting as acute abdomen is relatively rare.

Patient was taken up for emergency surgery and cholecystectomy with drainage of subhepatic collection. Pericholecystic collection and inflamed GB was seen [Table/Fig-2a,b]. Gall bladder specimen was hard in consistency with few polypoidal intraluminal projections



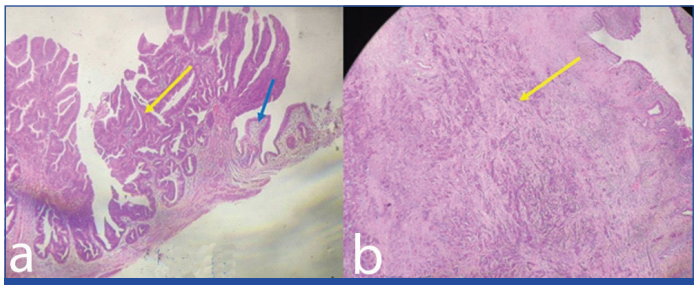
[Table/Fig-1a,b]: Contrast enhanced CT scan shows-(A) Irregularly thickened Gall Bladder (GB) wall with diffuse arterial (Figure -1b) and venous (Figure -1A) phase enhancement, (B) Pericholecystic collection (C) Homogenously enhancing enlarged lymph nodes in porta and peripancreatic region, (D) Subdiaphragmatic collection (E) Midline caecum and ileocecal junction with features of malrotation (most of the small bowel loops being on right side and large bowel loops on left side of abdomen).

[Table/Fig-3a,b] and was sent for Histopathological Examination (HPE). The HPE report revealed papillary type of mucosal lesion infiltrating into muscular and serosal layer with presence of granulation tissue surrounding perforation site [Table/Fig-4]. Final diagnosis was ICPN of GB with an associated invasive carcinoma-moderately differentiated with perforation. Since preoperatively, there was no initial suspicion of GB neoplasm, only cholecystectomy was done. Patient was referred to Surgical Oncology Department for further management and the pathological staging would be T2 or more.



[Table/Fig-2]: (a) Intra operative images showing inflamed Gall Bladder (GB) (A) and (b) pericholecystic collection (B).

[Table/Fig-3a,b]: Gross specimen image of Gall bladder showing papillary growth (Blue arrows).



[Table/Fig-4]: (a) Histopathological slide (H&E, 400x) shows-Normal Gall Bladder (GB) mucosa (Blue arrow), (b) Infiltrated tumour cells in Gall Bladders (GB) mucosa (yellow arrows).

Patient was lost to follow-up and did not report to surgical oncology department.

DISCUSSION

The ICPN of GB is a subtype carcinoma of IPCB duct and grows submucosally. Two types of ICPN has been described-invasive and non invasive. More than 50% of all ICPN cases exhibits invasive component [1]. Features of obstructive jaundice are seen in ICPN extending to cystic duct/bile duct [2,3]. Tumoural intraepithelial neoplasm (TIN) is a preinvasive condition which is considered separate from non tumoural neoplasms and invasive carcinomas [4]. Intraductal Papillary Mucinous Neoplasms (IPMN) of the pancreas, Intraductal papillary neoplasm of the bile duct (IPNB) and Intra-ampullary Papillary Neoplasm of Ampulla of Vater (IAPN) comes under the category of TIN of pancreatico-biliary system. TINs had been referred by different names such as “pyloric gland adenoma”, “papillary adenoma”, “tubulopapillary adenoma”, “intestinal adenoma”, “biliary adenoma”, “papillary neoplasm”, “papillary carcinoma” and “intracystic papillary neoplasm” [4].

The ICPN of the gallbladder is very rare and considered premalignant with reported incidence of less than 0.5% according to World Health Organisation (WHO) Classification of Tumours of the Digestive System, World Health Organization of Tumours, International Agency for Research on Cancer (IARC), Lyon, 2010 [5]. In 2010, WHO classified it into two types namely adenoma (like papillary, pyloric gland, foveolar gland, bile, tubular, intestinal or otherwise) and intra-cystic papillary neoplasm. However most of these cases cannot be placed into one of the WHO categories (with rare exception of pyloric type), hence these are usually placed under unified entity. The radiological differential diagnosis includes all benign, malignant and non neoplastic GB polyps and GB carcinoma. Radiologically, it is difficult to differentiate and preoperative diagnosis of ICPN of GB is very difficult. However, in present case, there was focal wall thickening with fluid surrounding the GB and patient had acute symptoms, hence acute cholecystitis was suspected with differential diagnosis of malignancy in view of adjacent lymph nodes.

Adsay V et al., were the first to define and propose inclusion and exclusion criteria for the definition of ICPN of the gall bladder. The ICPN does not produce mucin and follows an “adenoma-carcinoma” sequence with exophytic component into the lumen with papillary or polypoid patterns. More than 50% of patients in their study diagnosed with ICPN had invasive cancer components [1]. Possibility of malignancy is high in lesions exceeding 1 cm [1]. According to Adsay V et al., study, ICPN have been described to have few specific features which include mass forming, exophytic (papillary or polypoid) lesions of size approximately 1.0 cm with intramucosal/pre-invasive neoplastic (dysplastic) growth which is distinct from the neighbouring mucosa. The criterion of more than or equal to 1.0 cm was arbitrary since dysplastic lesions less than 1.0 cm also have a potential risk for malignancy [1].

According to the study done by Kang JS et al, polyps of the gall bladder which are less than 1 cm are not indicated for surgery since most of them are benign [4]. More than 90% of ICPNs had T2 stage or less. In addition, papillary lesions <1.0 cm of the GB have been reported to have a very low risk of malignancy. The ICPN patients have better grade of differentiation with lower rates of regional lymph node and distant metastases. They carry a better prognosis than conventional GB Carcinomas and would appear to present or be detected at an earlier stage than gall bladder carcinoma, as the proportion of patients with T1 ICPN or GBC were 32% and 9% in Adsay V et al.and 36% and 8% in the Kang JS et al., study respectively [1,4].

The CPN is a relatively new concept with uncertain diagnostic features. Imaging-based discrimination between gallbladder cancer and ICPN is not possible. The ICPN with no invasive cancer component generally has a very good prognosis but half of ICPN cases were reported to have invasive cancer components [6-8]. But even when accompanied by an invasive cancer, the prognosis of ICPN is good compared to that of other gall bladder cancers. The treatment strategy for patients with ICPN has not clearly been established. However, according to study done by Kang JS et al , for T0 or T1 ICPN, simple cholecystectomy would suffice, while extended cholecystectomy (cholecystectomy and liver wedge resection) or even more extensive surgery should be performed for T2 or above ICPN with regional lymph node resection [4,9,10]. Since patient of the present study, had perforation with moderately differentiated invasive carcinoma and there was presence of adjacent lymphnodes, it is T2 or above and the ideal treatment would have been extended cholecystectomy with regional lymphadenectomy, however it was not done for this patient since there was no preoperative suspicion.

Gross specimen showed multiple papillary growths within the lumen. The HPE report revealed papillary type of mucosal lesion infiltrating into muscular and serosal layer with presence of granulation tissue surrounding perforation site. Final diagnosis was ICPN of GB with an associated invasive moderately differentiated carcinoma. To the best of our knowledge, invasive ICPN of GB with perforation and presenting with acute symptoms have not been described previously.

CONCLUSION(S)

The ICPN of gallbladder with invasive component is a relatively rare neoplasm and has good prognosis when compared with GB adenocarcinoma. Perforation is usually not seen with ICPN but should not be overlooked and differential diagnosis of carcinoma has to be considered.

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