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Intracholecystic papillary neoplasm of the gallbladder in an elderly patient: A case report and updated literature review

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Abstract
Background: Intracholecystic papillary neoplasms (ICPN) of the gallbladder are rare epithelial lesions considered precursors to invasive carcinoma. Histologically, they show papillary proliferation of biliary epithelium with variable dysplasia.
Case Presentation: We report the case of an 82-year-old hypertensive woman presenting with right upper quadrant pain triggered by heavy meals. Imaging revealed a lobulated intraluminal mass in the gallbladder fundus suggestive of neoplasia. After multidisciplinary discussion, a laparoscopic cholecystectomy was performed. Histopathology confirmed ICPN with high-grade dysplasia, without invasive foci. Postoperative course was uneventful, and the patient remained asymptomatic at six months.
Conclusion: ICPN is an uncommon but important preinvasive gallbladder lesion. Early recognition and complete surgical resection result in excellent prognosis, highlighting the importance of histopathological evaluation of gallbladder polyps in elderly patients.

Keywords: Gallbladder tumor, Intracholecystic papillary neoplasm, high-grade dysplasia, Cholecystectomy, case report

1. Introduction
Gallbladder carcinoma is an aggressive malignancy frequently diagnosed at advanced stages due to nonspecific clinical presentations. Intracholecystic Papillary Neoplasm (ICPN) is recognized as a distinct precursor lesion within the spectrum of gallbladder epithelial tumors. Analogous to intraductal papillary neoplasms of the bile duct and pancreas, ICPNs are characterized by papillary proliferation of dysplastic biliary epithelium confined to the mucosa, with potential progression to invasive adenocarcinoma if untreated. Although rare, their clinical identification is crucial because complete excision without invasion leads to favorable outcomes.
This article reports the clinical, radiological, histopathological, and therapeutic aspects of ICPN in an elderly patient, with an updated literature review emphasizing recent advances.

2. Case Presentation
Patient Profile
An 82-year-old woman with a four-year history of hypertension (on amlodipine 5 mg daily) presented with intermittent right upper quadrant (RUQ) abdominal pain evolving over one year. The pain was postprandial, radiating to the right shoulder, and exacerbated by fatty meals. No jaundice, vomiting, or bowel habit changes were reported.

Clinical Examination
The patient was afebrile, hemodynamically stable (BP 140/80 mmHg, HR 80 bpm), with BMI 20.6 kg/m². Abdominal exam revealed mild tenderness in the right hypochondrium without palpable mass or hepatomegaly. No signs of jaundice or systemic illness were noted.

Imaging Workup
- **Ultrasound (April 24, 2025):** Detected a 28 × 22 × 30 mm irregular, immobile, lobulated mass localized at the gallbladder fundus, accompanied by microcalculi.

- **Magnetic Resonance Imaging (MRI) biliary (May 2, 2025):** Confirmed a 29 × 22 mm ulcerated, enhancing lesion in the gallbladder fundus without hepatic invasion or bile duct dilatation (Figure 1).

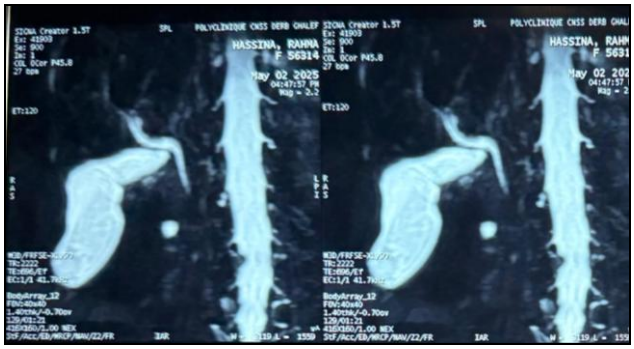

Fig 1: Abdominal MRI showing a lobulated enhancing lesion in the gallbladder fundus (arrow) with no hepatic invasion

- **Computed Tomography (CT) scan (May 20, 2025):** Showed a non-distended gallbladder containing a heterogeneous fundal mass adjacent to liver segment IV; no lymphadenopathy was present (Figure 2).

Fig 2: CT scan (May 20, 2025) demonstrating a heterogeneous fundal mass

Laboratory Investigations

Liver function tests were normal (bilirubin 8.1 mg/L, ALP 70 IU/L, AST 15.6 IU/L, ALT 16.7 IU/L). Tumor markers were not elevated: CEA 4.57 µg/L, CA 19-9 18.19 U/mL.

3. Management

A multidisciplinary tumor board (including surgery, geriatrics, and oncology) recommended extended oncologic resection (bisegmentectomy IVb and V) due to lesion size and proximity to hepatic parenchyma. However, considering the patient's advanced age and comorbidities, a decision was made for a less invasive approach after preoperative optimization (hydration, nutritional support, fall prevention). The patient underwent a retrograde laparoscopic cholecystectomy, with intraoperative liver biopsy of segment IV and placement of a subhepatic drain. The gallbladder was distended and thin-walled, with no evident peritoneal or hepatic nodules observed intraoperatively.

4. Histopathological Findings

Macroscopic examination of the surgical specimen revealed no visible polypoid lesions (Figure 3). Microscopically, there was a papillary proliferation of biliary-type epithelium with complex branching architecture. The epithelial cells exhibited high-grade dysplasia with marked nuclear atypia and mitotic activity but no stromal or vascular invasion.

Fig 3: Operative specimen showing a lobulated intraluminal mass in the gallbladder fundus.

- **Final diagnosis:** Intracholecystic papillary neoplasm (ICPN) with high-grade dysplasia, non-invasive.

5. Postoperative Course and Follow-up

The patient had an uneventful postoperative recovery and was discharged on postoperative day 3, with nutritional supplementation including vitamin D.

At six months, she remained asymptomatic with normal liver function tests. Follow-up abdominal ultrasound showed no recurrence.

6. Discussion

Epidemiology and Pathophysiology

ICPNs are rare preinvasive neoplasms of the gallbladder epithelium, accounting for a small fraction of gallbladder tumors [1, 2]. They may occur across a wide age range but have a higher incidence in elderly patients. Chronic cholecystitis and cholelithiasis have been associated with ICPN development in some cases [5].

Histologically, ICPNs exhibit papillary or villous architecture lined by dysplastic biliary epithelium. Four main subtypes are described biliary, intestinal, gastric, and oncocytic distinguished by cellular morphology and mucin profile [6].

Clinical Presentation

Symptoms are often nonspecific, including intermittent RUQ pain and dyspeptic symptoms, which can delay diagnosis. Imaging may reveal polypoid lesions or gallbladder wall irregularities, but differentiation from benign polyps or adenomyomatosis is challenging [8].

Imaging Characteristics

- Ultrasound often detects an immobile lobulated mass, sometimes with gallstones.
- MRI and CT provide better lesion characterization, showing enhancing papillary masses without evidence of invasion or biliary obstruction in non-invasive cases [9].

- Despite advances, definitive diagnosis relies on histopathology.

Surgical Management

The standard treatment for ICPNs is complete surgical resection by cholecystectomy. For lesions suspicious for invasion or located close to the liver, extended hepatic resection (bisegmentectomy IVb and V) may be recommended to ensure negative margins and reduce recurrence risk [10, 11].

However, the balance between oncologic control and surgical risk is essential, especially in elderly or frail patients. As shown in our case, limited surgery with liver biopsy may be justified if invasion is not clinically or radiologically apparent [13, 14].

Prognosis and Surveillance

Non-invasive ICPNs have an excellent prognosis after complete resection, with low recurrence rates. Nevertheless, some ICPNs may rapidly transform into invasive carcinomas with potential metastases [7], underscoring the necessity for vigilant postoperative surveillance.

Smaller lesions (< 1 cm), termed “incipient ICPNs,” also warrant attention, as they may acquire high-grade dysplasia over time [9].

7. Conclusion

Intracholecystic papillary neoplasm is a rare, clinically significant preinvasive lesion of the gallbladder. Recognition through imaging and histopathology is key for appropriate management. While extended hepatic resection may be indicated in selected cases, laparoscopic cholecystectomy remains curative for non-invasive lesions, particularly in elderly patients with comorbidities. Long-term follow-up is essential due to the risk of malignant transformation.

Conflict of Interest

Not available

Financial Support

Not available

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