

## Original Article

# Gallbladder cancer management impacted by coexistent tuberculosis

Amit Javed, Asit Arora, Raja Kalayarasan, Puja Sakhuja, Anil K. Agarwal

### ABSTRACT

Department of GI Surgery  
GB Pant Hospital &  
MAM College,  
Delhi University,  
New Delhi, India

#### Correspondence:

Dr. Anil Kumar Agarwal  
Email: [aka.hpb@gmail.com](mailto:aka.hpb@gmail.com)  
[aka.gis@gmail.com](mailto:aka.gis@gmail.com)

**Background:** In endemic areas, gallbladder cancer (GBC) and tuberculosis may coexist. This study aimed to ascertain the impact of coexistent tuberculosis on the management of patients with GBC.

**Methods:** Data of patients with proven GBC with coexistent tuberculosis managed at our centre between January 2003 and December 2007 were analysed from a prospective gallbladder cancer database to highlight the management issues and ascertain the impact that coexistent tuberculosis had on the outcome in these patients.

**Results:** Of the 340 patients of GBC evaluated at our centre, 7 patients had concomitant tuberculosis and constituted the study group. All the patients were women (mean age 56.3 years). The commonest presenting symptoms were abdominal pain, decreased appetite and significant weight loss. Two patients were found to have tuberculosis on preoperative evaluation on a fine-needle aspiration cytology from the left supraclavicular lymph nodes; 3 patients were detected intraoperatively (1 had peritoneal tuberculosis on staging laparoscopy and 2 had tubercular lymphadenitis on interaortocaval lymph node sampling) and 2 were detected postoperatively with histopathological examination showing GBC with tubercular lymphadenitis of the hepatoduodenal lymph nodes. Six of these 7 patients underwent surgery with curative intent and 1 underwent a surgical bypass.

**Conclusion:** Five of the 7 patients of GBC with coexistent tuberculosis could have been denied the chance of curative surgery had a preoperative/intraoperative biopsy confirmation not been done. Thus, histopathological confirmation is mandatory before labelling a cancer as metastatic and denying the patient a chance for cure.

**KEYWORDS:** Gallbladder cancer (GBC), tuberculosis, intraoperative biopsy

## Introduction

Gallbladder cancer (GBC) is an aggressive malignancy and a significant proportion of patients are inoperable at the time of presentation due to advanced loco-regional disease, non-locoregional lymphadenopathy (aortocaval), and peritoneal or solid organ metastases.<sup>1</sup> Tuberculosis is endemic in developing countries and is more common particularly in patients with

malnutrition, malignancies and immunosuppression.<sup>2</sup> The disease affects the intestinal tract, lymph nodes, peritoneum and solid organs in varying combination. Up to two-thirds of patients with abdominal tuberculosis have abdominal lymphadenopathy or peritoneal disease in addition to intestinal involvement.<sup>3,4</sup> A coexistent abdominal tuberculosis (manifesting as peripheral/

abdominal lymphadenopathy or miliary peritoneal deposits) in association with GBC can have a significant impact on staging of the disease and subsequent management. Ours is a high-volume centre for the surgical treatment of GBC. This paper aims to report our experience of managing GBC in patients with coexistent tuberculosis and to ascertain how associated tuberculosis impacted on the management and outcome.

## Methods

From a prospective GBC database, we retrospectively reviewed the case records of patients with GBC who were managed at our centre between January 2003 and December 2007. Patients with biopsy-proven GBC and coexistent tuberculosis formed the study group (**Table 1**).

All the patients had undergone a detailed clinical history taking and examination. Apart from the routine hematological and biochemical investigations, the patients were evaluated with an ultrasound followed by a contrast-enhanced CT scan/magnetic resonance imaging (MRI) of the abdomen, an upper gastrointestinal endoscopy and a chest X-ray. Patients with findings suspicious of distant metastases on physical examination or imaging studies (palpable supraclavicular lymphadenopathy, aortocaval lymphadenopathy, liver or peritoneal nodules) underwent a fine-needle aspiration cytology (FNAC) (direct or under image-guidance). Ascitic fluid tap for malignant cytology was done in all patients with clinical/radiological evidence of ascites on preoperative work-up. Patients with jaundice due to involvement of the extrahepatic bile duct underwent biliary drainage before surgical resection.

All patients considered resectable on preoperative work-up underwent a staging laparoscopy followed by laparotomy.

During the staging laparoscopy, a thorough evaluation for any suspicious lesions in the liver and peritoneal cavity was done which, if present, were biopsied. In the absence of metastases, a laparotomy and an aortocaval lymph node biopsy were done (regardless of their enlargement on preoperative imaging) before surgical resection. The most common surgical procedure performed was a radical cholecystectomy (segments IVB/V with enbloc clearance of the lymph nodes in the hepatoduodenal tissue, retroportal, posterior pancreaticoduodenal lymph nodes and along the hepatic artery up to the celiac axis). Extended liver/adjacent organ resections were done in order to achieve an R<sub>0</sub> resection whenever indicated.

## Results

During the study period between January 2003 and December 2007, a total of 340 patients of GBC were evaluated at our centre. Of these, there were 7 patients of GBC in whom concomitant tuberculosis was identified and they constituted the study group. Two patients were found to have tuberculosis on preoperative evaluation on an FNAC from the left supraclavicular lymph nodes; 3 patients were detected intraoperatively (1 patient had peritoneal tuberculosis on staging laparoscopy and 2 had tubercular lymphadenitis on intraaortocaval lymph node sampling) and 2 patients were detected postoperatively with histopathological examination (of the resected specimen) showing adenocarcinoma of the gallbladder with tubercular lymphadenitis of the hepatoduodenal lymph nodes (**Table 1**). All the patients were women (mean age 56.3 years). The commonest presenting symptom was abdominal pain (all patients), 3 patients had

**Table 1: Case details of the 7 study patients**

S. No.	Age/Sex	Symptoms	Site of involvement (TB)	Treatment	Surgery
1	42/F	Pain abdomen	Supraclavicular lymph node	Pre- and post-operative ATT	Radical cholecystectomy
2	57/F	Pain abdomen, jaundice, vomiting	Supraclavicular lymph node	Pre- and post-operative ATT	Palliative gastrojejunostomy
3	55/F	Pain abdomen	Peritoneum	Pre- and post-operative ATT	Radical cholecystectomy
4	58/F	Pain abdomen	Inter-aortocaval lymph node	Post-operative ATT	Radical cholecystectomy
5	65/F	Pain abdomen, jaundice	Interaortocaval lymph node	Post-operative ATT	Radical cholecystectomy+ CBD excision
6	68/F	Pain abdomen	Gallbladder with HDL lymph node	Post-operative ATT	Radical cholecystectomy
7	49/F	Pain abdomen, jaundice	Gallbladder with HDL lymph node	Post-operative ATT	Radical cholecystectomy+ CBD excision

*HDL=hepatoduodenal ligament; CBD=common bile duct; ATT=antitubercular treatment*

jaundice and 1 patient had vomiting due to gastric outlet obstruction. All patients complained of decreased appetite and significant weight loss. In 4 of the 7 patients, the decrease in appetite and weight loss preceded the onset of abdominal pain. In addition, 3 patients gave a history of low-grade fever. Preoperative imaging (ultrasound/CT scan/MRI with magnetic resonance cholangiopancreatography [MRCP]) of the abdomen revealed a mass replacing the gallbladder in 4 patients and irregular wall thickening of the gallbladder in 3 patients. Three patients had intrahepatic biliary dilatation with a mid-common bile duct block (due to tumor infiltration) and these underwent biliary drainage before surgery. In addition, significant lymphadenopathy in the hepatoduodenal ligament (HDL) was seen in 4 patients. None of these patients had radiological evidence of para-aortic lymphadenopathy. In one patient, an upper gastrointestinal endoscopy revealed evidence of duodenal infiltration.

Two patients were found to have enlarged left supraclavicular lymph node, FNAC from which revealed tubercular lymphadenitis during the preoperative evaluation. Both these patients were started on antitubercular treatment (ATT) with isoniazid, rifampicin, pyrazinamide and ethambutol and were taken up for surgery after 4 weeks. Of these, 1 patient underwent a radical cholecystectomy. The second patient had a locally advanced tumor and underwent a palliative bypass for gastric outlet obstruction. One patient was found to have multiple peritoneal deposits on staging laparoscopy which were suggestive of widespread peritoneal metastases. A peritoneal biopsy from these nodules was taken and surgery was abandoned. The final histopathological examination confirmed tuberculosis. The patient was started on ATT and subsequently underwent a radical cholecystectomy. In 2 patients, the frozen section from the intraaortocaval lymph nodes showed evidence of tubercular lymphadenitis. In both these patients, the resection for GBC (radical cholecystectomy in one and radical cholecystectomy with extrahepatic bile duct resection in the other) was done in the same setting. In 2 patients, the hepatoduodenal lymphadenectomy specimen (one following standard radical cholecystectomy and the other following radical cholecystectomy with extrahepatic bile duct resection) revealed tubercular lymphadenitis with adenocarcinoma involving the gallbladder.

All patients received ATT in the postoperative period (isoniazid, rifampicin, pyrazinamide and ethambutol for the first 2 months followed by isoniazid and rifampicin for the next 6

months) as per the standard protocol. All patients had an uneventful postoperative course.

## Discussion

In endemic areas such as North India, GBC and tuberculosis may coexist. Tuberculosis can present with varied manifestations ranging from peripheral and abdominal lymphadenopathy to diffuse peritoneal disease with tubercles scattered all over the peritoneal cavity.<sup>2,4,5</sup> An enlarged supraclavicular, para-aortic or extensive hepatoduodenal lymphadenopathy may be due to tuberculosis rather than caused by metastasis from the GBC itself. Similarly, peritoneal tubercles of miliary tuberculosis may mimic a metastatic peritoneal disease from a GBC. Thus, it is imperative that a biopsy be done to confirm the advanced disease in such patients before labelling them as inoperable.

In the present series, 7 patients had GBC with co-existent tuberculosis. Two patients were found to have an enlarged supraclavicular lymph node on preoperative assessment, fine needle aspiration cytology from which confirmed tuberculosis. Both these patients were reasonably well-preserved, there was no evidence of dissemination elsewhere (on physical examination or imaging), and the enlarged supraclavicular lymph node was the sole indicator of advanced disease. In 3 patients the disease was detected intraoperatively. In 1 patient there were multiple peritoneal deposits seen on staging laparoscopy. This patient would have easily been labelled as one with metastatic disease and denied a chance of curative surgery in the absence of a biopsy which confirmed tuberculosis; the patient subsequently underwent a radical cholecystectomy after ATT was initiated. Similarly, 2 other patients on exploration were found to have large inter-aortocaval lymph nodes. A frozen section biopsy from these nodes showed tubercular lymphadenitis and both underwent surgery with curative intent in the same setting. In 2 patients with GBC, the final histopathological examination of the resected hepatoduodenal lymphadenectomy specimen showed tubercular lymphadenitis and both these patients received treatment for tuberculosis during the postoperative period. Although, hepatoduodenal lymphadenectomy forms an integral component of radical surgery for GBC, extensive lymphadenopathy may preclude resection. In the present series, 5 of the 7 patients could have been denied the chance of curative surgery had a preoperative or an intraoperative biopsy confirmation not been done. Thus,

it is of vital importance that a biopsy is done in these patients before labelling them as inoperable because surgery offers a reasonable chance of survival. Biopsy may be important in cases where the findings on physical examination and imaging are incongruous. There may also be other soft indicators such as the presence of low-grade fever or decreased appetite and significant weight loss preceding the onset of abdominal pain which may point towards the diagnosis of associated tuberculosis especially in endemic areas.

To the best of our knowledge, this is the only study which highlights the impact of tuberculosis on the staging and management of GBC and adds credence to the adage that histopathological confirmation is mandatory before labelling

a cancer as metastatic and denying the patient a chance for cure.

## References

1. Mekeel KL, Hemming AW. Surgical management of gallbladder carcinoma: a review. *J Gastrointest Surg.* 2007;**11**:1188–93.
2. Lawn SD, Zumla AI. Tuberculosis. *Lancet.* 2011;**378**:57–72.
3. Bhansali SK. Abdominal tuberculosis. Experiences with 300 cases. *Am J Gastroenterol.* 1977;**67**:324–37.
4. Rai S, Thomas WM. Diagnosis of abdominal tuberculosis: the importance of laparoscopy. *J R Soc Med.* 2003;**96**:586–8.
5. Bhargava DK, Shriniwas, Chopra P, Nijhawan S, Dasarathy S, Kushwaha AK. Peritoneal tuberculosis: laparoscopic patterns and its diagnostic accuracy. *Am J Gastroenterol.* 1992;**87**:109–12.