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# Old man gallbladder syndrome: Gangrenous cholecystitis in the unsuspected patient population



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#### ABSTRACT

INTRODUCTION: Acute cholecystitis is a common surgical condition, but not many are aware of the serious complication of gangrenous cholecystitis (GC). Presence of GC increases patients' postoperative complications, morbidity and mortality. Predictive factors for GC include age >45, male gender, white blood cell count >13,000/mm3 and ultrasound findings of a negative Murphy's sign.

CASE PRESENTATION: (1) GW, 83 male with dull right upper quadrant pain and a negative Murphy's sign with further imaging showing a thickened septated gallbladder suggestive of GC. Patient's surgery was difficult and he received a cholecystostomy tube for drainage. (2) PH, 75 male with minimal right upper quadrant pain, equivocal ultrasound with a negative Murphy's sign and computer tomography (CT) showing acute cholecystitis. Patient was taken to the operating room for cholecystectomy, with pathology consistent with gangrenous cholecystitis.

DISCUSSION: Multiple laboratory findings and imaging patterns have been found to be highly predictive of GC. Along with age and WBC, thickened gallbladder wall and lack of mucosal enhancement have been predictive of GC. On physical examination, lack of Murphy's sign secondary to denervation from gangrenous changes also increases the index of suspicion for GC.

CONCLUSION: GC is a serious complication of acute cholecystitis with increased morbidity and mortality. There should be a high index of suspicion for GC if the above unique physical and laboratory findings are present.

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#### 1. Introduction

Acute cholecystitis is a commonly occurring entity that general surgeons encounter in their practice. Though the management of acute cholecystitis is commonplace, one must still be aware of the somewhat rare but serious complication of gangrenous cholecystitis (GC). Gangrenous cholecystitis occurs when increased distension in the gallbladder causing ischemia and necrosis [2,8]. While the treatment of gangrenous cholecystitis is similar to that of acute cholecystitis, the presence of GC increases the risk of postoperative complications, morbidity and mortality [1]. Here are two case presentations of patients who on history and physical examination had symptoms of "simple" acute cholecystitis, but in the operating room were found to have gangrenous changes, resulting in a more complicated intraoperative and postoperative course. These cases bring to light many of the risk factors to predict GC, in hopes to increase the suspicion for GC pre-operatively and avoid some of the complications noted postoperatively. Though an extensive literature search, some of the predictive factors for

GC include age >45, male gender, which blood count (WBC) >13,000/mm3 and ultrasound/CT findings of negative Murphy's sign, increased gallbladder wall thickening and lack of mucosal enhancement [1,3,5,6].

#### 2. Case presentation

#### 2.1. Patient 1

Mr. GW was an 83 year old man with a history of hypothyroidism, hyperlipidemia and osteoarthritis, who presented with 1–2 day history of nausea, non-bilious vomiting, and non-localized abdominal pain. He had complained of generalized weakness and malaise and had noticed he had darker urine. He denied fever or chills prior to presentation to the emergency room.

On physical exam he had a temperature of 37.8 °Celsius (C) and was hemodynamically stable. His abdominal examination revealed mild tenderness over the right upper quadrant with no signs of rebound or guarding. He was also noted to have a negative clinical Murphy's sign. His admission laboratory testing showed WBC of 16,400/ mm3 with a left shift, and normal liver function tests except indirect bilirubinemia of 2.4 mg/dL. A right upper

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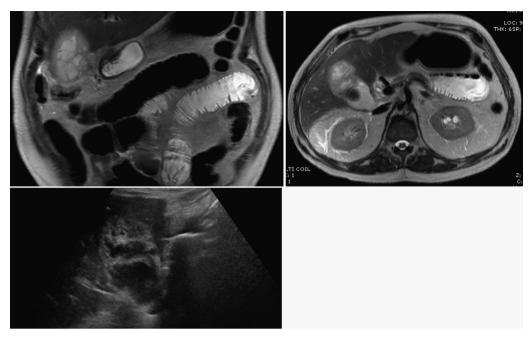


Fig. 1. Left to right: MRCP and ultrasound imaging from Mr. GW. #1 and #2: MRCP showing thickened gallbladder wall, lack of wall enhancement and septated surface with diffuse inflammation. #3: Ultrasound showing thickened wall, maximally dilated at 1.2 cm with multiple septations.

quadrant ultrasound was preformed and showed gallbladder dilation with wall thickness of 13 mm with septations, common bile duct of 7 mm, and sludge and stones suggestive of acute cholecystitis with a negative sonographic Murphy's sign. Subsequent magnetic resonance cholangiopancreatography (MRCP) showed a distended heterogeneous gallbladder with thickened trabeculated wall, with findings suggestive of gangrenous gallbladder (Fig. 1).

Patient was started on Ampicillin–Sulbactam empirically for acute cholecystitis, and on hospital day 2 patient remained clinically asymptomatic with a temperature of 38 °C. His WBC was trending down and patient taken for laparoscopy cholecystectomy.

In the operating room (OR) there was found to be dense adhesions with the omentum covering the gallbladder, along with a walled off gangrenous gallbladder. Upon further visualization and dissection greyish liquefied necrotic material drained from the gallbladder. The dissection was difficult due to the edema and dense adhesions of omentum over liver and gallbladder surfaces so a cholecystostomy tube was inserted along with a second drain over the gallbladder bed. Postoperatively the patient did well, had no further complications and was able to tolerate a regular diet. He remained afebrile, had normalized WBC and was discharged home on postoperative day 4 with the drains in place and augmentin for 7 days. The patient was monitored closely postoperatively with frequent

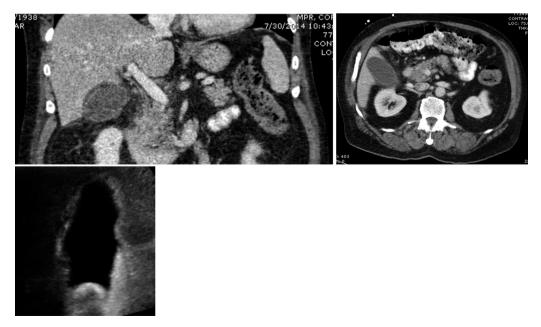


Fig. 2. From left to right: Mr. PH, CT and ultrasound findings. #1 and #2: CT showing a distended gallbladder wall with decreased contrast enhancement of the wall and pericholecystic fluid. #3: Ultrasound showing normal mild gallbladder wall thickening with irregular appearance of the gallbladder.

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