ROLE OF MULTIDETECTOR COMPUTED TOMOGRAPHY IN EMERGENT BILIARY CONDITIONS

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Introduction

Acute abdominal pain can be caused by a variety of biliary pathologic causes. Due to the overlapping signs and symptoms of many biliary diseases, a precise diagnosis is not always achievable clinically. Imaging can lead to an accurate diagnosis and help decrease the differential diagnosis. Multidetector computed tomography (CT) is better when acute biliary disease is suspected, even though ultrasonography (US) is the most helpful imaging modality for primary evaluation of the biliary system. Because ultrasound is relatively inexpensive, easily accessible, requires little time for examination, and does not involve radiation, it is the recommended initial imaging modality for the assessment of suspected acute calculous cholecystitis. The unique benefits of US over other imaging modalities include its capacity to elicit "Murphy's sign" and its high sensitivity and specificity in identifying gallstones. US is yet not helpful for evaluating all acute cholecystitis complications. CT can assess acute cholangitis, biliary stone disease, gallstone pancreatitis, benign and malignant biliary obstruction, pyogenic hepatic abscess, hemobilia, and iatrogenic complications such as biliary leak and mal-positioned biliary drains and stents

Aim of the work

The aim of the work was to assess the role of multidetector computed tomography (MDCT) in emergent biliary system conditions.

Patients and Methods

PATIENTS: This study included 31 patients diagnosed as emergent biliary disease. The patients were recruited from the CT unit of radiodiagnosis department, faculty of medicine, Alexandria university hospitals from September 2023 to September 2024.

•METHODS:

Patients were subjected to history taking, clinical examination by referring physician, ultrasound and multidetector computed tomography.

Ultrasound was done in stable patients for preliminary assessment of the biliary disease. Pre-contrast series were obtained from just above dome of diaphragm through the ischial tuberosity.

Contrast injection:75-100 ml of non-ionic contrast agent was administrated manually or by injector at rate of 3 ml/sec into antecubital fossa vein, the amount of contrast material injected was based on the patient's body weight (1-1.5 ml/kg).

•Arterial phase 30 s after contrast injection

•Venous portal phase 70 -80s after contrast injection

•Delayed phase 5-10 mins after contrast injection.

•The images were analyzed using a specialized workstation (OsiriX workstation) & post processing software using multi-planner reconstruction (axial, sagittal and coronal views).

Results

The final diagnoses of the 31 patients included in this study are summarized below. The majority of patients were diagnosed with inflammatory causes, with a prevalence of 74.19%. The distribution of final diagnoses was as follows:

Table (1): Final diagnoses of included patients (n = 31)

Final diagnosis	Number	percent
Inflammatory	23	%74.19
Non-complicated acute cholecystitis	2	%6.45
Complicated cholecystitis	14	%45.16
Ascending cholangitis	3	%9.68
Gall stone pancreatitis	3	%9.68
Hepatic abscess	1	%3.23
Obstructive	4	%12.9
Neoplastic	3	%9.68
Cholangiocarcinoma	2	%6.45
Cancer head of pancreas	1	%3.23
Obstructive by CBD stone	1	%3.23
Iatrogenic	4	%12.9
Biliary leak	2	%6.45
Stent abnormality	1	%3.23
Hemobilia	1	%3.23

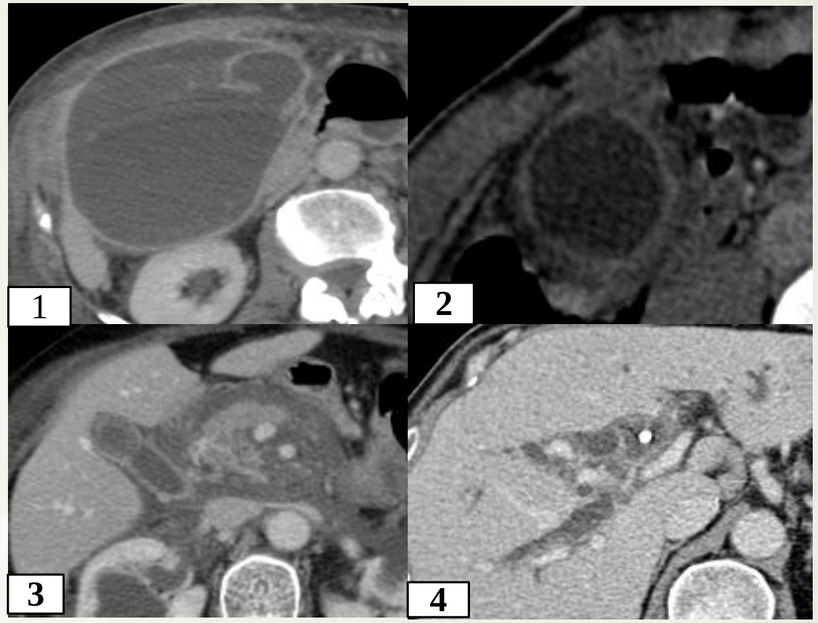

Figure 1: The most frequent MDCT diagnoses in patients in this study: Axial CECT images at venous phase show (1) perforated cholecystitis, (2) gangrenous cholecystitis, (3) gallstone pancreatitis and (4) ascending cholangitis.

Conclusion

•Ultrasound is the modality of choice for diagnosis of gallbladder stones.

•MDCT is reliable diagnostic imaging modality in emergent biliary conditions.

•MDCT is significantly more sensitive for diagnosing some complications of acute cholecystitis than US. •MDCT establish a prompt definitive diagnosis of GB perforation and hence decrease morbidity and mortality. •MDCT is an efficient modality in differentiating inflammatory and neoplastic causes. •Use of combined imaging modalities provide the complementary strength of both ultrasound and MDCT.US should be the initial imaging modality. CT should be employed as a secondary tool when further confirmation or evaluation of complex cases is needed.

•Emergent biliary conditions with severe and vague abdominal pain likely presented with complications.