

Original Research

Evaluation of gall bladder diseases with ultrasonography

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ABSTRACT:

Background: Gall bladder diseases are quite common. The present study was performed to assess diseases of gall bladder using ultrasonography (USG). **Materials & Methods:** 70 patients diagnosed with gall bladder diseases of either gender underwent gallbladder examination was performed with a 3.5-5 MHz probe by scanning in subcostal position. **Results:** Age group 25-35 years had 12 patients, 35-45 years had 30 patients and 45-55 years had 28 patients. The difference was non-significant ($P > 0.05$). Common pathologies were gall stone with sludge in 16, cholecystitis in 34, polyps in 8 patients and benign tumors in 8 patients. The difference was significant ($P < 0.05$). Common clinical findings were fever in 56, nausea/vomiting in 60, pain in 66, jaundice in 22 and unusual stool or urine in 15 patients. The difference was non-significant ($P > 0.05$). **Conclusion:** Ultrasound is non-invasive imaging modality for the assessment of the gallbladder diseases.

Key words: Fever, gallbladder diseases, Ultrasound

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INTRODUCTION

Gall bladder diseases are quite common. These are common cause of emergency hospitalization. The occurrence is common in females as compared to males. Among all, cholelithiasis is relatively common. Emergency conditions involving the gallbladder and the bile ducts are common radiological challenging problems.¹ Imaging provides valuable information for the following reasons to ensure the final diagnosis, as up to 20% of patients clinically classified as having acute cholecystitis have another disease that does not require surgery, to prevent the patient from complications in case of delayed diagnosis and to detect complications which may urge the surgical treatment.²

Ultrasound is the first imaging test used for detection of gallbladder and bile duct abnormalities. This test is non-invasive, uses no dyes, and is not painful. Ultrasound produces good images of the small ducts in the liver and the higher part of the major bile duct.³ Ultrasound (US) is the preferred imaging examination for the diagnosis of acute cholecystitis and is the first method used when the clinical presentation is suggestive of biliary pathology.⁴ The main findings of acute calculous cholecystitis on US

include in addition to the presence of stones: distension of the gallbladder lumen, gallbladder wall thickening, a positive US Murphy sign, pericholecystic fluid and a hyperemic wall upon evaluation with Color Doppler.⁵ The present study was performed to assess diseases of gall bladder using ultrasonography (USG).

MATERIALS & METHODS

This study was performed on 70 adult patients diagnosed with gall bladder diseases of both genders. All selected patients were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Gallbladder examination was performed with a 3.5-5 MHz probe by scanning in subcostal position. Warm gel was applied to the area after removing clothing away from abdomen with the patient in the supine position, scan with the probe in longitudinal plane was performed, the probe orientate cephalic and asking patient holding breath. Once the gallbladder is clearly identified, we obtained longitudinal and transverse views of the gallbladder. The results were analysed statistically. P value less than 0.05 was set significant.

RESULTS

Table I: Distribution of patients

Age group (years)	Number	P value
25-35	12	0.74
35-45	30	
45-55	28	

Table I shows that age group 25-35 years had 12 patients, 35-45 years had 30 patients and 45-55 years had 28 patients. The difference was non-significant ($P > 0.05$).

Table II: Assessment of gall bladder pathologies

Pathologies	Number	P value
Gall stones with sludge	16	0.05
Cholecystitis	34	
Polyps	12	
Benign tumor	8	

Table II, graph I shows that common pathologies were gall stone with sludge in 16, cholecystitis in 34, polyps in 8 patients and benign tumors in 8 patients. The difference was significant ($P < 0.05$).

Graph I: Assessment of gall bladder pathologies

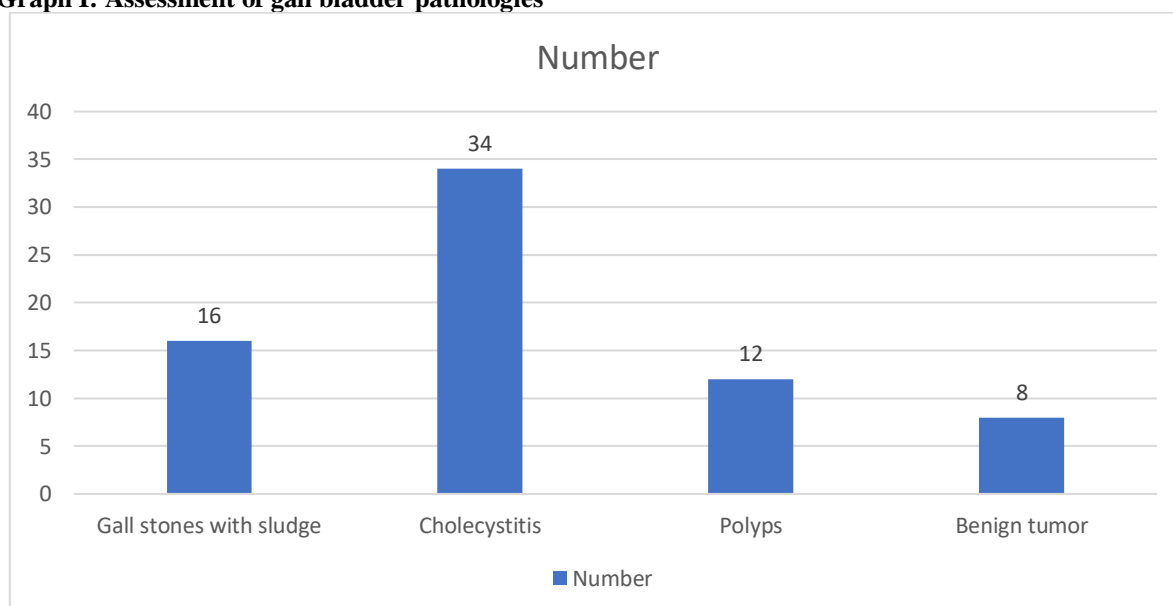


Table III: Assessment of clinical features

Clinical features	Number	P value
Fever	56	0.92
nausea/vomiting	60	
Pain	66	
Jaundice	22	
unusual stool or urine	15	

Table III shows that common clinical findings were fever in 56, nausea/vomiting in 60, pain in 66, jaundice in 22 and unusual stool or urine in 15 patients. The difference was non-significant ($P > 0.05$).

DISCUSSION

Abdominal pain can result from abnormalities in gall bladder, kidneys, pancreas, stomach, duodenum, spleen etc. All these conditions can be diagnosed easily via sonographic procedure. Other cases cannot be properly diagnosed with ultrasound such as

uncomplicated peptic ulcer disease, acute myocardial infarction and basal pneumonia.^{6,7}

Ultrasound has the best sensitivity and specificity for evaluating patients with suspected gallstones.⁸ Some ultrasonographic findings are more strongly associated with acute cholecystitis than others: a positive Murphy's sign (pain is provoked by either the transducer or the sonographer's palpation under guidance, in the exact area of the gallbladder) is reported to have sensitivity as high as 88%.^{9,10} The present study assesses diseases of gall bladder using USG.

We found that age group 25-35 years had 12 patients, 35-45 years had 30 patients and 45-55 years had 28 patients. Kola et al¹¹ included 150 cases of GB pathologies using ultrasound using spatial digital iU22 Philips Convex probe 3.5 MHz. The age of the patients is between (26 - 89) years, 76 Patients (50.60%) were males and 74 patients (49.40%) were females. Range of age group of accumulation for gallstone presence was (26 - 58) years and most common in females than males. Incidence of gallstone are 88% (58.7%) patients (female 34.7% and 24% male) and ratio of incidence is between female to males 13:9. Other pathologies of gallbladder were found to be cholecystitis 16.60%, polyp with sludge 16.60%, benign tumor 1.30%, normal 6.70%. Ultrasonography is a single imaging modality sufficient for evaluation of patient with suspected gallbladder pathologies which can provide information about the presence of gallstone and more over about site and cause of biliary tract obstruction. Ultrasound is highly sensitive and specific means for diagnosis of the gallbladder stones. Sensitivity and specificity of ultrasound in evaluation of gallstones high respectively.

We found that common pathologies were gall stone with sludge in 16, cholecystitis in 34, polyps in 8 patients and benign tumors in 8 patients. Shea et al¹² reported a systematic review of imaging studies published between 1978 and 1990. They concluded that cholescintigraphy had the best sensitivity (97%; 95% confidence interval [CI]: 96%, 98%) and specificity (90%; 95% CI: 86%, 95%) in the detection of acute cholecystitis, whereas US had a sensitivity of 88% (95% CI: 74%, 100%) and a specificity of 80% (95% CI: 62%, 98%). Shea et al by using state-of-the-art methods for the meta-analysis of diagnostic accuracy studies: in this systematic review, they observed that cholescintigraphy has the highest diagnostic accuracy of all imaging modalities in the detection of acute cholecystitis.

We found that common clinical findings were fever in 56, nausea/vomiting in 60, pain in 66, jaundice in 22 and unusual stool or urine in 15 patients. Ralls et al¹³ reported that one of the most important advantages of ultrasound over other imaging techniques in the investigation of acute cholecystitis is the ability to assess for a sonographic Murphy sign, which is a reliable indicator of acute cholecystitis with a sensitivity of 92%. An increased gallbladder wall thickness of > 3.5 mm has been found to be a reliable and independent predictor of acute cholecystitis.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that ultrasound is non-invasive imaging modality for the assessment of the gallbladder diseases.

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