

Assessment of Gall Bladder Diseases Using Ultrasonography

Shivaraju C S¹

¹Associate Professor, Department of Radiology, PK Das Institute of Medical Sciences, Vaniamkulam, Ottapalam, Kerala, India.

Abstract

Background: The aim is to assess diseases of gall bladder using USG. **Subjects and Methods:** Seventy- two adult patients age ranged 25-45 years diagnosed with gall bladder diseases of either gender underwent gallbladder examination was performed with a 3.5-5 MHz probe by scanning in subtotal position. **Results:** Age group 25-35 years had 32 and 35-45 years had 40 patients. Common pathologies were gall stone with sludge in 36 (50%), benign tumors in 10 patients, cholecystitis in 22, polyps in 6 patients. The difference was significant ($P < 0.05$). Common clinical findings were fever in 56, nausea/vomiting in 68, pain in 72, jaundice in 38 and unusual stool or urine in 25 patients. The difference was significant ($P < 0.05$). **Conclusion:** Ultrasound is non-invasive and the least expensive imaging modality for the assessment of the gallbladder diseases.

Keywords: Abdominal pain, gallbladder diseases, Ultrasound.

Corresponding Author: Dr. Shivaraju C S, Associate Professor, Department of Radiology, Pk das institute of medical sciences, Vaniamkulam, Ottapalam, Kerala, India. Email: drshiv.cs@gmail.com.

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Introduction

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 pneumonitis.^[1]

Emergency conditions involving the gallbladder and the bile ducts are common radiological challenging problems.^[2] Imaging provides valuable informations 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.^[3]

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.^[4] 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.^[5] 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.^[6] Considering this, we performed present study to assess diseases of gall bladder

using USG.

Subjects and Methods

This radiological study was performed on seventy- two adult patients age ranged 25-45 years diagnosed with gall bladder diseases of either gender after considering the utility of the study and obtaining approval from ethical review committee of the institute. All selected patients were informed regarding the study and their written consent was obtained.

Demographic data such as name, age, gender etc. was recorded. Gallbladder examination was performed with a 3.5-5 MHz probe by scanning in subtotal 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 compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

Results

Table 1: Patients distribution

Age group (years)	Number	P value
25-35	32	0.82
35-45	40	

Age group 25-35 years had 32 and 35-45 years had 40 patients. The difference was non- significant ($P > 0.05$)

[Table 1].

Table 2: Gall bladder pathologies

Pathologies	Number (%)	P value
Gall stones with sludge	36 (50%)	0.05
Benign tumor	10 (13.8%)	
Cholecystitis	22 (30.5%)	
Polyps	6 (8.3%)	

Common pathologies were gall stone with sludge in 36 (50%), benign tumors in 10 patients, cholecystitis in 22, polyps in 6 patients. The difference was significant ($P < 0.05$) [Table 2].

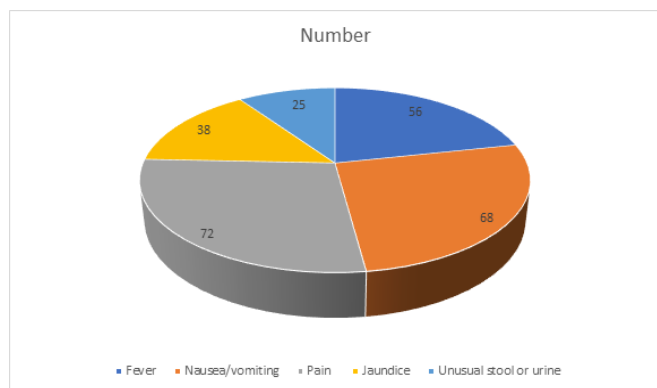


Figure 1: Clinical profile of patients

Common clinical findings were fever in 56, nausea/vomiting in 68, pain in 72, jaundice in 38 and unusual stool or urine in 25 patients. The difference was significant ($P < 0.05$) [Figure 1].

Discussion

Ultrasound has the best sensitivity and specificity for evaluating patients with suspected gallstones. 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%.^[7,8] The present study assesses diseases of gall bladder using USG.

Our results showed that age group 25-35 years had 32 and 35-45 years had 40 patients. Ralls at al,^[9] 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.

We observed that common pathologies were gall stone with sludge in 36 (50%), benign tumors in 10 patients, cholecystitis in 22, polyps in 6 patients. Hamdan et al,^[10] determined the protocol of ultrasound scanning in demonstrating incidence and complication of Gall-bladder (GB) pathologies on 150 patients using ultrasound using

spatial digital iU22 Philips Convex probe 3.5 MHz. All patients were evaluated with ultrasonography following the international scanning guidelines and protocols. 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

We found that common clinical findings were fever in 56, nausea/vomiting in 68, pain in 72, jaundice in 38 and unusual stool or urine in 25 patients. Shea et al,^[11] 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. Recently Kiewiet et al,^[12] update the diagnostic accuracy summary estimates for imaging modalities.

Kola et al,^[13] 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 (97.7%, 95.6%) respectively.

Conclusion

Ultrasound is non-invasive and the least expensive imaging modality for the assessment of the gallbladder diseases.

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