



COMPARATIVE EFFICIENCY OF OF ULTRASONOGRAPHY AND COMPUTED TOMOGRAPHY IN DETECTION OF COMMON BILE DUCT STONES TAKING MRCP AS GOLD STANDARD

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ABSTRACT

Background: choledocholithiasis is a fairly common problem encountered in surgical practice. It can be primary in-situ stones in common hepatic duct or common bile duct or secondary due to gallstone slipping into CHD or CBD. Secondary stones are more common in obese, middle aged females as these subset of populations are more prone to develop gallstones. considering the morbidity and the complications of obstructive jaundice and early diagnosis and treatment-i.e. open access surgery or ERCP guided extraction whichever is suited for a given patient-is mandatory. In this article we have endeavored to decipher the comparative efficacy of USG and CT in detection of stones in CHD or CBD taking MRCP as the gold standard.

Aims: To evaluate comparative efficiency of ultrasonography and computed tomography in reaching a definitive diagnosis of choledocholithiasis.

Materials and Methods: A total of 100 cases of clinically suspected choledocholithiasis were included in our study. All of them were subjected to USG. Patients with sonographically proven obstructive jaundice-i.e. dilated intrahepatic biliary radicals and /or CHD and CBD with or without detectable stones were then subjected to CT scan and MRI in that sequence. Patients were interrogated with 2-5 MHz convex transducer of HD-7 USG machine(Philips), Siemens 16 slice CT scanner and Brivo 1.5 Tesla(G.E.) MRI machine using protocol for MRCP. Data were analysed, sensitivity and specificity of both USG and CT were calculated and compared using ANOVA method.

Results: Of the hundred cases of clinically suspected choledocholithiasis ultrasonography detected 68 cases. CT scan could detect 12 cases while MRCP detected 96 cases. ERCP and surgery revealed choledocholithiasis in 96 cases. 4 cases had benign stricture and two cases had cholangiocarcinoma at the lower end.

Conclusion: Ultrasonography is superior to CT scan in detecting choledocholithiasis while MRI remains the gold standard. We recommend USG for every patient of clinically suspected choledocholithiasis or obstructive jaundice followed by MRCP for confirmation.

KEYWORDS : Ultrasonography, computed tomography, magnetic resonance imaging, choledocholithiasis cholangiocarcinoma.

INTRODUCTION:

Stones in common hepatic duct or common bile duct collectively called choledocholithiasis is a very common clinical problem encountered by surgeons cutting across age, sex, race, religion. Primary stones may be encountered in both males and females while secondary stones are more common in middle aged fair and obese females. Three types of stones exist-cholesterol stones, pigment stones and mixed stones. Choledocholithiasis causes obstructive jaundice and significant morbidity i.e. colicky abdominal pain vomiting, pruritis, altered coagulation profile etc. A definite risk of cholangiocarcinoma exist in long standing cases. Early diagnosis and extraction of stones therefore are of Paramount importance. Both USG and MRI can detect choledocholithiasis -the latter with higher degree of accuracy. Stones at the lower end of CBD are liable to be missed by USG due to obstruction by bowel gas. In this study we have tried to compare the relative efficiency of USG and CT in detection of CHD and CBD stones.

MATERIALS AND METHODS:

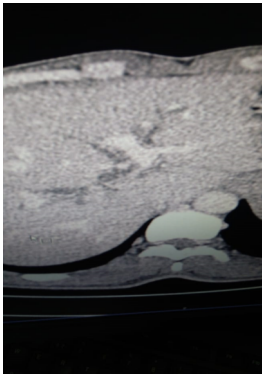
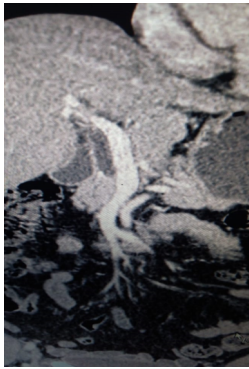
A total of 100 cases with clinically suspected stones in CHD or CBD referred from department of general surgery and medicine, Bankura sammilani Medical College Bankura, West Bengal were included in our study. Patients were first interrogated with 2-5MHz convex transducer of HD-7(Philips) USG machine. Those showing sonographic evidence of obstructive jaundice that is dilated intrahepatic duct and/ or extrahepatic biliary radicles were then subjected to CT scan(Siemens Somatom 16 slice) and MRCP(GE Brivo 1.5 Tesla). Patients were kept in fasting state prior to all these

modalities. Findings were interpreted separately by two radiologists and one was blinded to the results of another. Findings of both USG and CT scan were compared with those of MRCP. Sensitivity and specificity of both USG and CT were calculated and compared.

RESULTS:

Of the hundred cases, 68 were females and 32 were males. 72 cases were between 32-40 years of age, 18 cases were between 4 to 50 years of age, 8 cases were between 51 and 60 years of age. there were two paediatric patients-11 years and 14 years of age. on USG 73 patients were diagnosed to have choledocholithiasis. In patients, USG diagnosis was false positive due to calcified sludge in 4 patients and calcified worm in one patient (misinterpreted as calculi). CT could detect only 12 cases while MRCP detected all 96 cases of choledocholithiasis (subsequently) proved by ERCP or surgical extraction. The data were plotted in tables and were analysed using ANOVA method. Sensitivity and specificity of USG ,CT and MRI were 76% and 85%, 12.5% and 54%, 100% and 96% respectively.





USG and MRI could detect multiple CBD calculi but CT could not in a case of obstructive biliopathy

DISCUSSION:

Choledocholithiasis is the commonest cause of obstructive jaundice. It can be formed in situ or can be passed from gallbladder. The latter are statistically more common in fatty female around 40 years of age. USG and MRI can reliably diagnose stones in the CHD and proximal CBD while USG has an inherent limitation in detecting stones in lower part of CBD. MRI can accurately diagnose stones in all parts of the CBD. As such MRI is the gold standard for diagnosis of choledocholithiasis CT is the least effective modality in diagnosis of CHD and CBD stones. In our study USG could detect 68 out of 96 cases of choledocholithiasis. CT could detect only 12 cases while MRI could detect all 96 cases. To sum up USG scores over CT in diagnosis of stones in CHD and CBD.

CONCLUSION:

USG is a superior modality than CT in detection of CHD and CBD stones. It is more widely available and unlike CT does not entail radiation hazard. All cases of obstructive biliopathy should undergo a USG scan and all USG negative patients should be subjected to MRI for further evaluation.