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CORRELATION BETWEEN ULTRASONOGRAPHY AND MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHY IN VARIOUS TYPES OF CHOLEDOCHAL CYSTS

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ABSTRACT

Background and objectives: To assess and compare the results of magnetic resonance cholangiopancreatography and ultrasonography in the diagnosis of various kinds of choledochal cysts. To investigate the efficacy of magnetic resonance cholangiopancreatography and ultrasonography as the primary diagnostic methods for patients who exhibit Choledochal Cyst clinical characteristics. To evaluate the limitations of magnetic resonance cholangiopancreatography and ultrasonography in the diagnosis of various forms of choledochal cysts.

Method: The study was a hospital-based cross-sectional study that included thirty patients who were referred for Ultrasonography and Magnetic Resonance Cholangiopancreatography to the Department of Radiodiagnosis, Nilratan Sircar Medical College & Hospital, Kolkata, West Bengal, India, with a clinical suspicion of Choledochal Cysts lesions and unintentionally discovered Choledochal Cysts lesions on patient's Ultrasonography and Magnetic Resonance Cholangiopancreatography done for other reasons during study period between January 2019 to June 2020.

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Result: The association between the cyst type in various radiological scans was not statistically significant (p=0.9455). Fusiform cysts were present in 29 (96.7%) individuals who underwent USG scanning, while saccular cysts were found in 1 (3.%) patients. The relationship between the CBD cyst's shape and the various radiological scans was not statistically significant (p=0.3132). In both MRCP and USG scans, all CBD cysts were fusiform. Shape of the CBD cyst did not significantly differ between USG and MRCP scanning (p=1.0000).

During MRCP scanning, 29 patients (96.7%) exhibited fusiform cysts, while one patient (3.3 %) had saccular cysts.

Conclusion: Ultrasonography and magnetic resonance cholangiopancreatography were performed on various choledochal cyst types. The mean CBD cyst size was not statistically different between the two radiologies (p=0.3606). IHBR Cyst Shape and Radiological Scans Did Not Correlate (p=0.9610). The CBD cyst's form did not correlate with radiological scans (p=0.3132). All USG and MRCP CBD cysts were fusiform. USG and MRCP scans yielded similar CBD cyst shapes (p=1.0000). Both radiologies had similar IHBR cyst mean sizes (p=0.4501).

Keywords: Choledochal cyst, ultrasonography, magnetic resonance cholangiopancreatography

INTRODUCTION

The term "choledochal cysts" (CDCs) refers to a collection of uncommon congenital biliary system development defects that are characterised by localised, multifocal, or diffuse aberrant cystic dilatation of any biliary tract segment. The common bile duct, however, is where it occurs most frequently. The bile duct has a different diameter with age. In the West, they are relatively uncommon, but they are more prevalent in Asia and more usually affect women. Clinically, neonatal hepatitis or biliary atresia cannot be distinguished from choledochal cyst when it manifests in infancy with cholestatic jaundice. Complex clinical presentations are seen in both children and adults [1,2]. In a tiny percentage of cases, the typical stomach pain, jaundice, and mass are seen. A choledochal cyst is not specifically associated with obstructive jaundice, according to a laboratory investigation. After ruling out blockage as the cause of the dilatation with multi-modality imaging technology, the diagnosis of a choledochal cyst is mostly based on the discovery of disproportional bile duct enlargement. Because it is non-invasive, convenient, affordable, and gives good detail knowledge of the portal structures, an abdomen ultrasound is the first imaging technique used. Some professional radiologist in

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their research publication proposes ultrasonography as the only imaging test for newborns because it is a reliable screening technique [2,3].

Choledochal cysts can be diagnosed via ultrasonography. Based on the operator's experience and abilities, it is possible to identify a certain type or class of choledochal cyst. Such diagnoses are made possible by high-resolution US equipment. Additionally, improvements in US technology now allow radiologists and ultrasonographers to make the diagnosis during the prenatal stage. Many patients' US scan results are diagnostic; however, in the preoperative period, supplemental studies, such as ERCP, CT scans, or MRI/MRCP, may be useful in defining specifics of the surrounding anatomy, the location of an anomalous pancreaticobiliary junction (APBJ), and the length of the common pancreaticobiliary channel. Abdominal US scan findings can assist in identifying choledochal cysts and related problems, such as choledocholithiasis, intrahepatic biliary dilatation, portal vein thrombosis, gallbladder or biliary neoplasms, pancreatitis, and hepatic abscesses. In their analysis of a surgical series including a total of 140 patients, Stringer MD et al. came to the conclusion that, despite being sensitive, US scan findings were frequently corroborated by CT scanning, hepatoiminodiacetic acid (HIDA) scanning, or ERCP. The cyst diameter altered significantly with compression, according to Sato et al.'s evaluation of their US data in 12 individuals with choledochal cysts. Compressing the structures is not recommended, according to the scientists, as it may confuse the diagnosis. using magnetic resonance Cholangiopancreatography, a relatively recent MR imaging technology, has revolutionised the imaging of the biliary and pancreatic ducts and has become a very accurate, non-invasive method of seeing the biliary tree and the pancreatic duct without the injection of contrast material [3,4].

Resonance in Magnetism with its built-in high contrast resolution, multi-planar capacity, and artifact-free depiction of anatomy and pathology, cholangiopancreatography is proving to be the non-invasive imaging of choice in these situations. As a powerful technique for evaluating individuals with CDC, MRCP has been on the rise. The best method for determining whether a patient has choledochal cysts and any accompanying anomalies is an endoscopic retrograde cholangiopancreatography (ERCP). The ERCP has intrinsic morbidity due to its invasiveness, though. In contrast, the magnetic resonance cholangiopancreatography (MRCP) is a helpful, non-invasive method that demonstrates good overall accuracy in the detection and classification of choledochal cysts. The biliary and pancreatic ducts (PD) can be easily and simultaneously delineated by the MRCP, whereas the ERCP may not be able to do so in

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patients with choledochal cysts due to the possibility of a narrowed or obstructed structure in the distal portion of the cyst. In light of this, patients with choledochal cysts may benefit more from the MRCP than the ERCP as a diagnostic technique. A multidetector computed tomography (MDCT) with reformatted imaging is another crucial method that can show the anatomical specifics of the biliary tree and the pancreaticobiliary duct union. However, it appears that the MRCP and CT have a limited capacity to identify specific small ductal abnormalities. Endoscopic ultrasonography, which is less intrusive than an ERCP, is a better tool for spotting anomalies as well as some minor, early lesions that are indicative of several problems. The goal of correlative imaging is to examine a single instance using two or more different modalities. In comparison to employing each imaging modality as a stand-alone procedure, one should be able to gain more diagnostic information by doing this [4,5].

In the current work, we concentrate on these two imaging modalities and how to use them to assess aberrant cystic dilatation of any part of the biliary trac. It also discusses how each has a better overall edge than the other. The cases were evaluated using MRCP and ultrasonography, respectively.

MATERIAL AND METHODS

With clinically suspected cases of Choledochal Cysts lesions and incidentally discovered Choledochal Cysts lesions on patient's Ultrasonography and Magnetic Resonance Cholangiopancreatography performed for other reasons during our study period January 2019 to June 2020, 30 cases of Choledochal Cysts were randomly selected for Ultrasonography and Magnetic Resonance Cholangiopancreatography at the Department of Radiodiagnosis, Nilratan Sircar Medical College & Hospital, Kolkata, West Bengal, India.

The study individuals who were interested to participate in the study voluntarily provided written informed consent during the study period. A thorough abdominal examination, a general physical examination, an evaluation of the other systems, and regular investigations were also performed on the study subjects. First, USG was performed, and then MRCP.

Inclusion criteria:

Patients who had been referred for Ultrasonography and Magnetic Resonance Cholangiopancreatography and had a clinical suspicion of having Choledochal Cysts lesions or who incidentally had Choledochal Cysts lesions found during their examinations for other conditions.

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Exclusion criteria:

Individuals with cardiac pacemakers, electromagnetic implants, and extremely ill, lifeless individuals.

RESULT

TABLE 1: AGE DISTRIBUTION

Age Group	Frequency	Percent
≤10 Years	22	73.3%
11-20 Years	4	13.3%
>20 Years	4	13.3%
Total	30	100.0%

In our study, 22(73.3%) patients were ≤10 Years old, 4(13.3%) patients were 11-20 years old and 4(13.3%) patient were >20 years old.

TABLE 2: SEX DISTRIBUTION

SEX	FREQUENCY	PERCENT
FEMALE	22	73.3%
MALE	8	26.7%
TOTAL	30	100.0%

In our study, 22(73.3%) patients were Female and 8(26.7%) patient were Male.

TABLE 3: JAUNDICE DISTRIBUTION

JAUNDICE	FREQUENCY	PERCENT
ABSENT	18	60.0%
PRESENT	12	40.0%

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TOTAL	30	100.0%

In our study, 12(40.0%) patients had jaundice.

TABLE 4: UPPER ABDOMINAL MASS DISTRIBUTION

UPPER ABDOMINAL MASS	**FREQUENCY**	**PERCENT**
ABSENT	**24**	**80%**
PRESENT	**6**	**20%**
TOTAL	**30**	**100.0%**

In our study, 6(20.0%) patients had upper abdominal mass.

TABLE 5: PAIN ABDOMEN DISTRIBUTION

PAIN ABDOMEN	**FREQUENCY**	**PERCENT**
ABSENT	**6**	**20.0%**
PRESENT	**24**	**80.0%**
TOTAL	**30**	**100.0%**

In our study, 24(80.0%) patients had pain Abdomen.

TABLE 6: SYMPTOMS DISTRIBUTION

Symptoms	**Frequency**	**Percent**
One symptom	15	3.3%
Two or more Symptoms	13	23.3%

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No	2	6.7%
Total	30	100.0%

In our study, 15(3.3%) patients had One symptom and 13(23.3%) patients had Two or more Symptoms.

TABLE 7: H/O REPEATED OF VOMITING

PAIN ABDOMEN	FREQUENCY	PERCENT
ABSENT	**22**	**73.3%**
PRESENT	**8**	**26.7%**
TOTAL	**30**	**100.0%**

In our study 8(26.7%) patients had h/o repeated vomiting.

TABLE 8: FEVER (RECURRENT) H/O DISTRIBUTION

H/O FEVER (RECURRENT)	FREQUENCY	PERCENT
ABSENT	**25**	**83.3%**
PRESENT	**5**	**16.7%**
TOTAL	**30**	**100.0%**

In our study, 5(16.7%) patients had recurrent H/O Fever.

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TABLE 9: TENDERNESS DISTRIBUTION

TENDERNESS	FREQUENCY	PERCENT
NO	23	76.7%
YES	7	23.3%
Total	30	100.0%

In our study, 7(23.3%) patients had Tenderness.

TABLE 10: HEPATOMEGALY DISTRIBUTION

HEPATOMEGALY	FREQUENCY	PERCENT
ABSENT	27	90%
PRESENT	3	10%
Total	30	100.0%

In our study 3 (10%) patients had hepatomegaly

TABLE 11: JAUNDICE AND AGE GROUP ASSOCIATION

	AGE GROUP			
JAUNDICE	≤10 YEARS	11-20 YEARS	>20 YEARS	TOTAL
ABSENT	11	3	4	18
Row %	61.1	16.7	22.2	100.0
Col %	50.0	75.0	100.0	60.0
PRESENT	11	1	0	12
Row %	91.7	8.3	0.0	100.0

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Col %	50.0	25.0	0.0	40.0
TOTAL	22	4	4	30
Row %	73.3	13.3	13.3	100.0
Col %	100.0	100.0	100.0	100.0

Chi-square value: 3.9583; **p-value:** 0.1382

In ≤10 Years, 11(50.0%) patients had jaundice. In 11-20 Years, 1(25.0%) patients had jaundice.

Association of jaundice vs Age Group was not statistically significant (p=0.1382).

TABLE 12: ASSOCIATION BETWEEN UPPER ABDOMINAL MASS WITH AGE GROUP

AGE GROUP				
UPPER ABDOMINAL MASS	**≤10 YEARS**	**11-20 YEARS**	**>20 YEARS**	**TOTAL**
ABSENT	16	4	4	24
Row %	66.6	16.7	16.7	100.0
Col %	72.7	100.0	100.0	80
PRESENT	6	0	0	6
Row %	100.0	0.0	0.0	100.0
Col %	27.3	0.0	0.0	20
TOTAL	22	4	4	30
Row %	73.4	13.3	13.3	100.0
Col %	100.0	100.0	100.0	100.0

Chi-square value: 3.3202; p-value: 0.1901. In ≤10 Years, 6(20%) patients had upper abdominal mass. Association of upper abdominal mass vs Age Group was not statistically significant(p=0.1901).

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TABLE 13: PAIN ABDOMEN AND AGE GROUP ASSOCIATION

AGE GROUP				
PAIN ABDOMEN	**≤10 YEARS**	**11-20 YEARS**	**>20 YEARS**	**TOTAL**
ABSENT	6	0	0	6
Row %	100.0	0.0	0.0	100.0
Col %	27.3	0.0	0.0	20.0
PRESENT	16	4	4	24
Row %	66.7	16.7	16.7	100.0
Col %	72.7	100.0	100.0	80.0
TOTAL	22	4	4	30
Row %	73.3	13.3	13.3	100.0
Col %	100.0	100.0	100.0	100.0

Chi-square value: 2.7273; **p-value:** 0.2557 In ≤10 Years, 16(72.7%) patients had pain Abdomen. In 11-20 Years, 4(100.0%) patients had pain Abdomen. In >20 Years, 4(100.0%) patients had pain Abdomen. Association of pain Abdomen vs Age Group was not statistically significant (p=0.2557).

Table 14: ASSOCIATION BETWEEN CONTENT OF CYST IN DIFFERENT RADIOLOGICAL SCANNING.

RADIOLOGICAL SCANNING			
CONTENT OF CYST	**USG**	**MRCP**	**TOTAL**
CLEAR	23	24	47
Row %	48.9	51.1	100.0
Col %	76.7	80.0	78.3
SLUDGE	7	5	12
Row %	58.3	41.7	100.0
Col %	23.3	16.7	20.0

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SLUDGE & MICROLITHIASIS	0	1	1
Row %	0.0	100.0	100.0
Col %	0.0	3.3	1.7
TOTAL	30	30	60
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

Chi-square value: 1.3546; p-value: 0.5080

In USG scanning, 23(76.7%) patients cysts were clear and 7(23.3%) patients cysts had Sludge.

In MRCP scanning, 24(80.0%) patient`s cysts were clear, 5(16.7%) patient`s cysts hadSludge and 1(3.3%) patient had Sludge & Microlithiasis.

Association of Content of Cyst in different radiological scanning was not statistically significant (p=0.5080).

Fig. 1. USG and MRCP images show smooth fusiform dilatation of entire extrahepatic bile duct consistent with Type IC choledochal cyst

Table 15: ASSOCIATION BETWEEN LOCATION OF THE CYSTS IN DIFFERENT RADIOLOGICAL SCANNING

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RADIOLOGY			
LOCATION OF THE CYSTS	**USG**	**MRCP**	**TOTAL**
CBD	24	23	47
Row % Col	51.1	48.9	100.0
%	80.0	76.7	78.3
CBD & IHBR	5	6	11
Row % Col	45.5	54.5	100.0
%	16.7	20.0	18.3
IHBR	1	1	2
Row % Col	50.0	50.0	100.0
%	3.3	3.3	3.3
TOTAL	30	30	60
Row % Col	50.0	50.0	100.0
%	100.0	100.0	100.0

Chi-square value: .1122; p-value: 0.9455

In USG scanning, 24(80.0%) patients had cysts in CBD, 5(16.7%) patients had cysts in CBD & IHBR and 1(3.3%) patient had cysts in IHBR.

In MRCP scanning, 23(76.7%) patients had cysts in CBD, 6(20.0%) patients had cysts inCBD & IHBR and 1(3.3%) patient had in IHBR.

Association of Location of the cyst in different radiological scanning was not statistically significant (p=0.9455).

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Fig. 2. USG and MRCP image correlation show focal segmental dilatation of extrahepatic bile duct consistent with Type IB choledochal cyst

Table 16: ASSOCIATION BETWEEN TYPE OF THE CHOLEDOCHAL CYSTS: USG Vs MRCP SCANNING

RADIOLOGY			
TYPE OF THE CDC	**USG**	**MRCP**	**TOTAL**
I	24	23	47
Row %	51.1	48.9	100.0
Col %	80.0	76.7	78.3
IV A	5	6	11
Row %	45.5	54.5	100.0
Col %	16.7	20.0	18.3
V	1	1	2
Row %	50.0	50.0	100.0
Col %	3.3	3.3	3.3
TOTAL	30	30	60
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

Chi-square value: .1122; p-value: 0.9455

In USG scanning, 24(80.0%) patients had type I choledochal cysts, 5(16.7%) patients hadtype IV A choledochal cysts and 1(3.3%) Patients had type V choledochal cyst.

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In MRCP scanning, 23(76.7%) patients had type I choledochal cysts, 6(20.0%) patients had type IV A choledochal cysts and 1(3.3%) patients had type V choledochal cysts.

Association of Type of the cysts in different radiological scanning was not statistically significant (p=0.9455).

Table 17: ASSOCIATION BETWEEN SHAPE OF THE CBD CYST: USG Vs MRCP SCANNING

RADIOLOGY			
Shape of the CBD cyst	**USG**	**MRCP**	**TOTAL**
Fusiform	29	29	58
Row %	50.0	50.0	100.0
Col %	96.7	96.7	98.3
Saccular	1	1	2
Row %	50.0	50.0	100.0
Col %	3.3	3.3	1.7
TOTAL	30	30	60
Row %	100.0	100.0	100.0
Col %	100.0	100.0	100.0

Chi-square value: 0.0000; p-value: 0.1000

In USG scanning, 29(96.7.0%) patients had Fusiform cysts and 1(3.3%) patients had Saccular cysts.

In MRCP scanning, 29(96.7%) patients had Fusiform cysts and 1(3.3%) patients had Saccular cysts.

Association of Shape of the CBD cyst in different radiological scanning was not statistically significant (p=0.3132).

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Table 18: ASSOCIATION BETWEEN SHAPE OF THE CBD CYST: USG Vs MRCP SCANNING

RADIOLOGICAL SCAN	FUSIFORM	SACCULAR	TOTAL
USG	29	0	29
MRCP	29	0	29
TOTAL	58	0	58

Chi-square value: .0000; **p-value:** 1.0000

All CBD cysts were fusiform both in USG and MRCP scanning. Association of Shape of the CBD cyst with USG Vs MRCP scanning was not statisticallysignificant (p=1.0000).

DISCUSSION

The most often utilised noninvasive modalities for assessing pancreaticobiliary disorders are USG, CT, and MRCP. The two invasive techniques that are used the most are percutaneous transhepatic cholangiography (PTC) and ERCP. 22 patients (73.3%) under the age of 10, 4 patients (13.3%) between the ages of 11 and 20, and 4 patients (13.3%) over the age of 20 participated in our study. There were 22 female patients (73.3%) and 8 male patients (26.7%) in our study. In our analysis, there were six individuals (20.0%) with upper abdominal mass. In our investigation, two patient groups—13 (23.3%) and 15 (3.3%)—had two or more symptoms each. In our investigation, three patients (10%) had hepatomegaly [5,6].

In the Arvinder Singh et al. experiment, USG and MRCP, two noninvasive imaging modalities, were primarily used to evaluate 50 patients with pancreaticobiliary disorders. The outcomes of the USG and MRCP in terms of histology and pancreaticobiliary diseases were compared where findings were available. Out of 10 participants in our study, 11 (50.0%) experienced jaundice. One (25.0%) of the participants between the ages of 11 and 20 had jaundice. Age Group and Jaundice was not statistically significantly associated (p=0.1382).

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Six individuals (20%) in ten years had an upper abdominal mass. Upper abdominal mass and age group did not have a statistically significant connection (p=0.1901). Four individuals (100%) aged between 11 and 20 complained of stomach pain [6,7].

34 (68%) of the 50 patients in the study by Arvinder Singh et al. were female, and 16 (32%) were male. There were more women than men, 1:2.1 males to females overall. The average age of the study's participants was 45.6 years. Hkansson et al. looked examined 85 individuals, and found that 42 (49%) were female and 43 (51%) were male. Men made up 47% of the 131 patients Ferrari et al. studied, while women made up 53% of the patient group. Upadhyaya et al. investigated 100 patients, 46% of whom were men and 54% of whom were women. Twenty (40%) of the 50 patients that Kushwah et al. examined were men, and 30 (50%) were women. In line with Kushwah et al., 68% of the 50 patients in our study were female and 32% were male [7,8].

Abdominal pain was reported by 4 people (100%) in more than 20 years. There was no statistically significant association between age group and stomach discomfort (p=0.2557). 7 cysts (or 23.3% of patients' cysts) revealed sludge during USG scanning, while 23 cysts (or 76.7% of patients' cysts) were clear.

In Arvinder Singh et al.'s study 15, the majority of cases (30%) were between the ages of 41 and 50. These cases were followed by 13 (26%) between the ages of 51 and 60, 8 (16%) between the ages of 31 and 40, 7 (14%) between the ages of 61 and 70, 3 (6%) between the ages of 21 and 30 years and >70 years, and only 1 (2%) case between the ages of 11 and 20 years. The youngest participant in our study was 18 years old, and the oldest was 75. These outcomes match those of the study by Kaur et al[8,9].

Cholelithiasis was the most common pathology observed in 22 (44%) of the patients on USG and MRCP, while cholecystitis was discovered in 4 (8%) of the patients on USG and MRCP, according to Arvinder Singh et al. Choledocholithiasis was discovered in 16 (32% of the patients) on USG and 17 (14% of the patients) on MRCP. MRCP identified a little calculus in one patient even though USG detected echogenic sludge. Choledocholithiasis could be identified with 81.2 and 100%, respectively, sensitivity, according to USG and MRCP data. Similar to this, the study by Kaur et al. found that USG and MRCP showed sensitivity of 63 and 100%, respectively, for choledocholithiasis detection.

One (3%) and 24 (80.0%) of the patient's cysts were clear during MRCP scanning, while 5 (16.7%) of the patient's cysts contained sludge. The cyst content in the radiographic scans did

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not show any statistically significant link (p=0.5080). During USG scanning, there were cysts in the CBD of 24 (80.0%) patients, the CBD and IHBR of 5 (16.7%), and the IHBR of 1 (3.3%).

Attri et al.'s investigation indicated that MRCP had a sensitivity and specificity of 85-100% for diagnosing choledocholithiasis, which is similar to our findings [9,10].

In one of the patients (2%) in our investigation, MRCP discovered a CBD stricture that USG had missed. Shadan et al. estimate that benign strictures happen in 4% of instances. The benign stricture was reported in 5 (10%) cases in a study by Kaur et al. and in a study by Bhatt et al.

In the MRCP scan, there were cysts in the CBD in 23 patients (76.7%), the CBD & IHBR in 6 patients (20.0%), and the IHBR in 1 patient (3.3%) [11,12].

Similar to our investigation, the study by Bhatt et al. discovered choledochal cysts in five patients. Choledochal cysts were observed in of instances, according to Upadhayaya et al.'s study, which is equal to our investigation. In our investigation, there was no statistically significant link between the cyst's location in several radiological scans (p=0.9455). Type I choledochal cysts were discovered in 24 (80.0%), type IV A choledochal cysts in 5, and type V choledochal cysts in 1, during USG screening. Type I choledochal cysts were found in 23 patients (76.7%) using MRCP scanning, type IV A choledochal cysts were found in 6 patients (20.0%), and type V choledochal cysts were found in 1 patient (3.3%) [13,14].

In a study by Sarawagi et al., it was discovered that 8 (4%) patients and 18 (9%) cases, respectively, had a lower medial insertion of the cystic duct. 22 (17%) and 11 (9%) instances, respectively, had a medical cystic duct insertion, according to Taourel et al. Shadan et al. revealed that 10% of cases had chronic pancreatitis, which is almost in agreement with the results of our analysis [14,15].

The cyst type in several radiological scans showed no statistically significant link with one another (p=0.9455). Thirty-nine (96.7%) of the patients who underwent USG scanning had fusiform cysts, while only one (3.3%) had saccular cysts.

Only one case of Kaltskin's tumour discovery was made. Two instances of USG misdiagnosis were made as a result of a poor echo window: one was labelled as calculus, and the other as veiled CBD. In 4% of the patients described by Shadan et al., 12% of the cases reported by Bhatt et al., and 2.3% of the cases reported by Reinhold et al.,

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cholangiocarcinoma was found. In a study by Kaur et al., cholangiocarcinoma was discovered in 10% of cases, which is nearly equal to the percentage observed in our study [15,16].

In our investigation, the USG's sensitivity, specificity, and accuracy for identifying cholangiocarcinoma were 70, 100, and 94%, respectively. According to Attri et al.'s study, which is comparable to ours, the overall sensitivity, specificity, and accuracy for cholangiocarcinoma on MRCP were 83.3%, 100%, and 98.0%. In their investigation, 10 (20%) individuals had the GB cancer identified on both USG and MRCP, and histology supported the diagnosis. In contrast to Bhatt et al.12, Shadan et al. observed that 4% of patients had cancer GB. Both the MRCP and the USG have a sensitivity and specificity of 100 percent. Similar results were obtained in the earlier study by Attri et al.10, which discovered that MRCP had 100 percent accuracy, 100 percent sensitivity, and 100 percent specificity for all three diagnostic criteria.

According to our research, 29 individuals (96.7%) had fusiform cysts during MRCP scanning, while one patient (3.3%) had saccular cysts [16,17].

It was observed that the percentage distribution of cholangiocarcinoma in our study closely resembled that of Soto et al. Our study's percentage distribution of pancreatic cancer is low compared to other studies. USG and MRCP both show 100% overall sensitivity and specificity for the detection of pancreatic mass. The pancreatic head was hidden by bowel gas shadows in Kaur et al.'s experiment, reducing the sensitivity of USG to only 75%. One (2%) patient in our study had a hydatid cyst of the liver that was found on MRCP but was misdiagnosed on USG as a simple hepatic cyst, similar to Shadan et al.'s study, which also revealed one (2%) incidence of the hydatid cyst.

One case of a hepatocholecystic fistula was detected by the MRCP while being overlooked by the USG. According to Tamura et al., the overall sensitivity and specificity values of MRCP for defining pathogenic pancreatic changes were 88 and 98%, respectively.

Every CBD cyst in our sample that was examined with MRCP and USG was fusiform. Between USG and MRCP scanning, the CBD cyst's shape did not significantly change (p=1.0000).29 patients (96.7%) showed fusiform cysts on MRCP scanning, while one patient (3.3%) had saccular cysts. The relationship between the form of the CBD cyst and USG versus MRCP scans was not statistically significant (p=1.0000) [17,18].

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CONCLUSION

The ultrasonography and magnetic resonance cholangiopancreatography was done for various choledochal cyst types which were evaluated and found out that There was no statistically significant difference in the mean size of the CBD cyst between the two radiologies (p=0.3606). IHBR Cyst Shape and Different Radiological Scans were not Statistically Significantly Associated (p=0.9610). There was no statistically significant relationship between the CBD cyst's shape in several radiological scans (p=0.3132).

Both in USG and MRCP scans, all CBD cysts were fusiform. Shape of the CBD cyst did not significantly differ between USG and MRCP scanning (p=1.0000). IHBR Cyst mean size differences between the two radiologies were not statistically significant (p=0.4501).

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REFERENCES

1. Goyani B, Ukani B, Patel M, et al. Ultrasonography and magnetic resonance cholangiopancreatography correlation in patients with obstructive jaundice. Int J Med Sci Pub Health 2015;4(7):1010–1014. DOI: 10.5455/ijmsph.2015.26032015205.

2. B arish MA , Yuce l EK , Ferrucci J T. M agnetic resonance cholangiopancreatography. New England J Med 1999;341(4):258–264. DOI: 10.1056/NEJM199907223410407.

3. Griffin N, Charles-Edwards G, Grant LA. Magnetic resonance cholangiopancreatography: the ABC of MRCP. Insights Imaging 2012;3(1):11–21. DOI: 10.1007/s13244-011-0129-9.

4. Sugita R, Sugimura E, Itoh M, et al. Pseudolesion of the bile duct caused by flow effect: a diagnostic pitfall of MR cholangiopancreatography. AJR Am J Roentgenol 2003;180(2):467–471. DOI: 10.2214/ ajr.180.2.1800467.

5. Håkansson K, Ekberg O, Håkansson HO, et al. MR and ultrasound in screening of patients with suspected biliary tract disease. Acta Radiologica 2002;43(1):80–86.

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 07, 2023

6. Ferrari FS, Fantozzi F, Tasciotti L, et al. US, MRCP, CCT and ERCP: a comparative study in 131 patients with suspected biliary obstruction. Med Sci Mon 2005;11(3):MT8–MT18.

7. Upadhyaya V, Upadhyaya DN, Ansari MA, et al. Comparative assessment of imaging modalities in biliary obstruction. Indian J Radiol Imag 2006;16(4):577. DOI: 10.4103/0971-3026.32273.

8. Kushwah A, Jain S, Agarwal R, et al. Biliary tract obstructive diseases: a comparative evaluation by ultrasonography and magnetic resonance cholangiopancreatography. Int J Scient Stu 2015;3(4):149–153.

9. Kaur A, Malaviya A, Deepika, et al. Comprehensive evaluation of MRCP versus ultrasonography in biliary obstruction. Int. J Med Res Rev 2018;6(3):143–152.

10. Attri A, Galhotra RD, Ahluwalia A, et al. Obstructive jaundice: its etiological spectrum and radiological evaluation by magnetic resonance cholangiopancreatography. Med J DY Patil Univ 2016;9(4): 443–450. DOI: 10.4103/0975-2870.186049.

11. Shadan A, Malik GM, Kamili MM, et al. Role of MRCP in the evaluation of suspected biliary and pancreatic disease. JK-Practitioner 2011; 16(1-2):20–25.

12. Bhatt C, Shah PS, Prajapati HJ, et al. Comparison of diagnostic accuracy between USG and MRCP in biliary and pancreatic pathology. Indian J Radiol Imag 2005;15(2):177–181. DOI: 10.4103/0971-3026.28796.

13. Sarawagi R, Sundar S, Gupta SK, et al. Anatomical variations of cystic ducts in magnetic resonance cholangiopancreatography and clinical implications. Radiol Res Pract 2016;1(11):1–6. DOI: 10.1155/2016/3021484.

14. Taourel P, Bret PM, Reinhold C, et al. Anatomic variants of the biliary tree: diagnosis with MR cholangiopancreatography. Radiology 1996;199(2):521–527. DOI: 10.1148/radiology.199.2.8668805.

15. Reinbold C, Bret PM, Guibaud L, et al. MR cholangiopancreatography: potential clinical applications. Radiographics 1996;16(2):309–320. DOI: 10.1148/radiographics.16.2.8966289.

16. Soto JA, Alvarez O, Lopera JE, et al. Biliary obstruction: findings at MR cholangiography and cross-sectional MR imaging. Radiographics 2000;20(2):353–366. DOI: 10.1148/radiographics.20.2.g00mc06353.

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 07, 2023

17. Cetiner-Alpay Z, Kulali F, Semiz-Oysu A, et al. The role of magnetic resonance cholangiopancreatography and diffusion-weighted imaging for the differential diagnosis of obstructive biliary disorders. S Afr J Rad 2017;21(1):a1193. DOI: 10.4102/sajr.v21i1. 1193.

18. Tamura R, Ishibashi T, Takahashi S. Chronic pancreatitis: MRCP versus ERCP for quantitative caliber measurement and qualitative evaluation. Radiology 2006;238(3):920–928. DOI: 10.1148/radiol. 2382041527.