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Demographic and Clinical Features of Choledochal Cyst in Childhood: Review of 30 Cases.

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Abstract

Background: Choledochacyst is the cystic dilalion of the biliary chahel disorder. It may be offer intahepalic, extrahepatic of both Choledochal cysts is more common in children than adult. Early diagnosis and appropriate treatment should be ensured for the children with choledochal cysts because these patients are at a higher risk of developing chronic liver disease and poor outcome. **Aim of the study:** The aim of this study was to assess the demographic and clinical features of choledochal cysts in children. **Methods:** This retrospective study was conducted in the Department of Pediatric surgery of Enam Medical College Hospital, Savar, and Dhaka, Bangladesh during the period from July 2015 to July 2020. **Result:** In this study, among 30 children with choledochal cysts mean age was 4.5 years (SD± 2.2 years) ranged between 1 month-15 years. Maximum children were female (70%). Type I was most common (66.7%) in the children and type IV was in 33.3% children. Abdominal pain, discomfort andcrying was most common (83.33%) among the children with 49 (81.7%) cases In this study mean alkaline phosphatase was 266 IU/L, mean AST was 82 IU/L, mean ALT was 67 IU/L, mean hemoglobin was 11.5 g/dl, mean albumin was 4.1 g/dl, mean globulin was 2.6 g/dl, mean bilirubin was 1.08 mg/dl and coagulopathy was in three (3.75%) children. **Conclusion:** Choledochal cysts is more common in infants than older children and in female children. Type I cyst was found in maximum children and type IV was also found. Abdominal discomfort pain was most common symptom of choledochal cysts. Clinical features found in this study were similar to other studies.

Keywords: Demographic, Clinical Features, Choledochal Cyst, and Childhood.

INTRODUCTION

Choledochal cysts are congenital bile duct anomalies which can involve the extrahepatic biliary chalne, the intrahepatic biliary chalne, or both.[1]It is a rare malformation of the pancreaticobiliary ductal system. Choledochal cysts originally were described by Vater and Ezlerin 1723.[2]This congenital lesion has a higher incidence in Asia, particularly in Japan.[3]Choledochal cysts is more common in infant and children. Most of the cysts (85%) are

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reported to be diagnosed in the first decade or less than 15 years of age and approximately 20% of cysts are diagnosed in older patients.[4,5]A constant anomalous arrangement of the pancreaticobiliary ductal system has been found in cases of choledochal cyst which may be found in the absence of choledochal cyst, precludes the development of a sphincter the junction of duct pancreatic and common bile ducts.[6] There is this pressure differential between tile pancreatic duct and tile common bile duct would allow flow of pancreatic juice into bile ducts, as there is no sphincter present to prevent it.[7]There is evidence that such flow does occur since the fluid aspirated from choledochal cysts has high amylase content.[8,9] Recurrent bouts of cholangitis would be produced from the free flow of pancreatic juice in to the common duct. This etiologic concept explains the clinical features of jaundice, pain and an intermittently present right upper quadrant mass. Choledochal cysts are currently classified into five major subtypes based on clinical and anatomic findings which are type I, type II, type III, type IV and type V.[10]Cystic type I is most frequently observed in both infants and older children.[11,12,13,14]Ultrasound examination is used for diagonosis and sometimes MRI can be used where available. The occurrence of this rare disease in Bangladesh is also rare. Thus, there are a few studies about choledochal cysts among children in Bangladesh. So, we aimed to assess the demographic and clinical features of choledochal cysts in children.

Objectives:

To evaluate the demographic and clinical features of choledochal cysts in children.

MATERIALS & METHODS

This retrospective study was conducted in the Department of P of Pediatric surgery of Enam Medical College Hospital, Savar, Dhaka, Bangladesh during the period from July 2015 to July 2020. Thirty children with choledochal cysts were selected for this study. The demographic and clinical data from ultrasound examination. Consent of the parents was taken to use all these data for this study. All the primary data were listed and analyzed using SPSS.

Inclusion criteria:

- Children with choledochal cysts
- Age between 1 month to 15 years
- Ultrasound examination

Exclusion criteria:

- Age under 1 month and above 15 years
- Transferred to another hospital
- Ultrasound examination not done

RESULT

In this study 30 children with choledochal cysts were assessed. Table-I shows the demographic features of children with choledochal cysts. Mean age was 4.5 years (SD± 2.2 years) ranged between 1 month-15 years. Maximum (66.66%) children were female. Mean weight was 13 kg (SD±6.3 kg) ranged between 4.5-38 kg. Maximum (42.86%) children were from upper level. Most of the (82.86%) children were unschooled. Figure-I shows the types children from middle class. Most of the children were unschooled (66.66%) Figure-I shows the types of cyst in children. Type I was most common (76.66%) in the children and type IV was in 23.33% children. Table-II shows symptoms presented in children with choledochal cysts. Abdominal

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pain, discomfort and crying most common among the children (83.33%) with case followed by abdominal mass (16.66%), jaundice (73.33%) fever 23.33% nausea 63.33% and had clay colour stool (13.33%). Table-III shows clinical findings of children with choledochal cysts. Mean alkaline phosphatase was 266 IU/L ranged between 122–1179 IU/L, mean AST was 82 IU/L ranged between 16–498 IU/L, mean bilitub in was1.8 g/dl ranged between 2.9-12.5 g/dl, mean hemoglobin was 11.5 g/dl ranged between 6.3–13.1 g/dl and Caogulopathy was in (3.75%) 1 paltun.

Figure-I: Type of cyst (N=30)

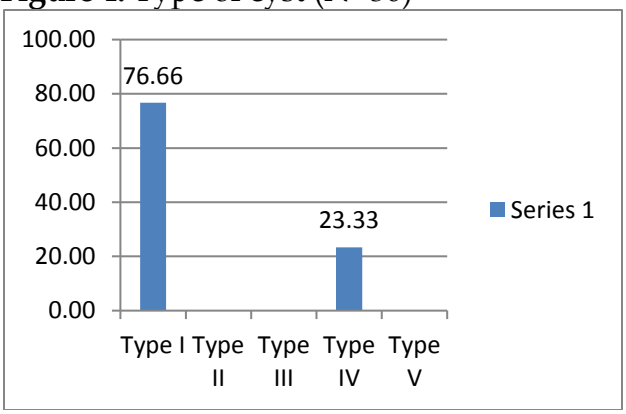

Table-I: Demographic features of children with choledochal cysts (N=30)

Characteristics		n	%
Age (in years)	Mean ± SD	4.5±2.8	
	Range	1 month -15 years	
Gender	Male	11	33.33%
	Female	24	66.66%
Weight (in kg)	Mean ± SD	13±6.3	
	Range	4.5-38	
Socioeconomic status	Upper	05	16.66%
	Middle	15	50%
	Lower	10	33.33%
Education level	Unschooled	20	66.66%
	Primary	9	30%
	Secondary	1	3.33%

Table-II: Symptoms presented in children with choledochal cysts (N=30)

Characteristics	n	%
Abdominal pain	25	83.33%
Abdominal mass	5	16.66%
Jaundice	22	73.33%
Fever	7	23.33%
Nausea	19	63.33%
Clay-colored stools	1	03.33%

Table-III: Clinical findings of children with choledochal cysts (N=30)

Clinical features	Mean (Range)
Alkaline phosphatase (IU/L)	266 (122–1179)
AST (IU/L)	82 (16–498)
ALT (IU/L)	67 (4–354)
Hemoglobin (g/dl)	11.5 (6.3–13.1)
Albumin (g/dl)	4.1 (2.5–5.6)
Globulin (g/dl)	2.6 (1.9–6.7)
Bilirubin, total (mg/dl)	1.08 (0.29–12.5)
Coagulopathy (n, %)	3/60 (3.75%)

DISCUSSION

Choledochal cysts is more common in children than adults. In this study among 30 children with choledochal cysts mean age was 4.5 years (SD± 2.2 years) ranged between 1 month-15 years. Similar result found in the study of Liuming H. et al where among 77 children, mean age in the two group was 4 years ranged between 2 months-15 yearsand 5 years ranged between 3 months-13 years.[15] Maximum (66.66%) children were female in this study. Similarly, in the study of Forny DN. et al[16], among 30 children 73.4% were female. In this study, mean weight was 13 kg (SD±6.3 kg) ranged between 4.5-38 kg. Similar results

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found in the study of Liuming H. et al where among 77 children, mean weight in two groups was 12 kg ranged between 4.6-43 and 13.5 kg ranged between 5.1-37 kg. In this study, maximum (50%) children were found middle class and most of the (66.66%) were unschooled.[15] Type I was most common (76.66%) in the children. Similar results found in the study of Forny DN. et al,[16] among 30 children type I cyst was observed in 93.4% of patients. In this study, abdominal pain discomfort by crying commonest among the children with 25 (83.33%) cases followed by 22 (73.33%) children had jaundice, abdominal mass 5 cases (16.66%), 7(23.33%) children has fever, 19(63.33%) children has nausea and children (3.33%) had clay colour stool. Similar results found in the study of Lipsett PA. et al,[17] where among 11 children 9 (82%) had abdominal mass, 7 (64%) children had jaundice, 4 (36%) children had abdominal pain, 2 (18%) children had fever, 2 (18%) children had nausea no children had clay-colored stools. In another study of Hung MH et al,[18] fourteen subjects (82.4%) in the classical pediatric group had abdominal pain but no subject in the infantile group had this feature. All eight (100%) patients in the infant group suffered from jaundice and 75% had clay-colored stools whereas only five (29.4%) patients in the classical pediatric group had jaundice and none had clay-colored stools. Other clinical features included vomiting, fever, and irritable crying; no significant differences in these features between the two groups were observed. Mean alkaline phosphatase was 266 IU/L ranged between 122–1179 IU/L, mean AST was 82 IU/L ranged between 16–498 IU/L, mean ALT was 67 IU/L ranged between 4–354 IU/L, mean hemoglobin was 11.5 g/dl ranged between 6.3–13.1 g/dl, mean albumin was 4.1 g/dl ranged between 2.5–5.6 g/dl, mean globulin was 2.6 g/dl ranged between 1.9–6.7 g/dl, mean bilirubin, total was 1.08 g/dl ranged between 2.5–5.6 g/dl and coagulopathy was in three (3.33%) children. Similar results found in the study of Singhavejsakul J. et al.[19] They divided 32 patients into two groups; less than two years and 2-14 years. In their study, mean alkaline phosphatase was675 IU/L ranged between 343–2516 IU/L in the first group 279 IU/L ranged between 138–1158 IU/L in the second group, mean AST was 280 IU/L ranged between 110–521 IU/L in first group and 80 IU/L ranged between 16–524 IU/L in the second group, mean ALT was 141 IU/Lranged between 57–246 IU/L in the first group and 68 IU/L ranged between 4–360 IU/L, mean hemoglobin was 9.8 g/dl ranged between 3.9–14.7 g/dl in the first group and 11.5 g/dl ranged between 6.7–13.8 g/dl in the second group, mean albumin was 13.52 g/dl ranged between 2.11–34.97mg/dl in the first group and 1.04 g/dl ranged between 0.28–12.7mg/dl in the second group and coagulopathy was in 8/12 (66.7%) children in the first group and 3/17 (17.6%) children in the second group.

Limitations of the study

In our study, there was small sample size and absence of control for comparison. Study population was selected from one center in Dhaka city, so may not represent wider population. The study was conducted at a short period of time. The sampling was retrospective and there was no random allocation, so there is risk of selection bias.

Conclusion and recommendations

From this study, it can be concluded that choledochal cysts is more common in infants

than older children and in female children. Type I cyst was found in maximum children Abdominal pain, discomfort/crying is the most common symtom of choledochal cyst followed by relactaunt to feed foxog nausea, vomiting, jaundice and abdomint mass. Clinical features found in this study were similar to other studies. Early diagnosis and appropriate treatment, specially in children younger than two years of age, should be emphasized, because these patients are at a higher risk of developing chronic liver disease and poor outcome.

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