Original Article

Incidence of Liver Cirrhosis in Infancy and Childhood

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ABSTRACT

Cirrohsis is the end result of chronic liver disease caused by the different pathological factors including congenital malformation, inflammation (hepatitis) and metabolic / storage disorders, leading to liver cell damage. To determine the incidence of liver cirrhosis in infancy and childhood with chronic hepatitis, we studied 41 biopsies of children for the presence of cirrhosis.

Objectives: To provide an overview of current childhood statistics of hepatitis and liver cirrhosis to facilitate analysis of the impact of past research discoveries on outcome and provide essential information for prioritizing future research directions.

Study Design: Retrospective Study.

Place and Duration of Study: This study was conducted at the Department of Basic Medical Sciences Institute, JPMC, Karachi from Jan. 2000 to Dec. 2007.

Materials and Methods: Slides / paraffin blocks of liver biopsies from patients under 15 years of age. The cases were of two categories i.e. retrospective & prospective. The distribution of 41 cases of hepatitis was according to Age & Sex. Total 22 (53.7%) cases were encountered in the youngest of 0-5 years age group, 13 (13.7%) cases in 6-10 years and only 6 (14.6%) cases in 11-15 years age group.

Results: The distribution of 41 cases of cirrhosis of liver, according to age & sex . the maximum 22 (53.77 %) youngest case in 0-5 years ,13 (31.7%) cases in 6-10 years & 6 (14.6%) cases were found in 11-15 year age group.

Conclusion: It is observed that the tendency of liver inflammation was decreased with increasing age and sexual differentiation shows male predominance with male to female ratio of 2.4:1. Liver cirrhosis discovered with increasing age in children. It is found to be a common cause for enlargement of liver with associated hepatitis and chronic liver diseases in infants and children. It can lead to higher risks of acute or chronic responses in adulthood and will require new treatment paradigms building on an increased understanding of the molecular processes for infancy and childhood liver cirrhosis.

Key Words: micro nodular cirrhosis, macro nodular cirrhosis, mixed type of cirrhosis, biliary cirrhosis.

INTRODUCTION

Liver Cirrhosis is a common disease[1]. Fibrotic nodules formation in liver are associated with ascites, occurred frequently[2]. In the presence of jaundice many cirrhotic livers appeared green in color instead of brown. The tawny color is due to a deposition of iron in the cirrhotic tissue. In the course of any liver inflammation, Cirrhosis can develop[3]. It has been customary to classify Cirrhosis in accordance with gross anatomic alterations[4] occurred in Portal Cirrhosis and Biliary Cirrhosis[5].

Cirrhosis is the end result of chronic liver disease, like congenital malformation, inflammation (hepatitis) and metabolic / storage disorders leading liver cell damage. Hepatic infection has become a major worldwide health problem due to potential natural course of the disease leading cirrhosis and then hepatocellular carcinoma[6,7]. In chronic liver diseases, the regeneration of liver cells are partial and gradual with impairments of functions. Due to increased fibrosis normal lobulation of liver is lost and there is pseudolobules formation is taken place as cirrhosis. In focal and minor injuries the complete regeneration may be possible[8]. Liver cirrohsis is the end result of protected liver damage[9]. Cirrhosis appears in compensated or decompensated state, in childhood compensated state of cirrhosis is compatible with normal growth and development for prolonged periods. An extensive list of causes is outlined in (Table 1)[18]. Researches demonstrate by sequential biopsy the progression from neonatal hepatitis to cirrhosis in a young child.

In Karachi, liver cirrhosis rate is increasing day by day. About 70% of the all new born have transplacental IgG antibodies against hepatitis[10] that last about 8 months of age. Due to lack of proper health facilities or poor economical status and less public awareness about the transmission of major communicable diseases like hepatitis B, hepatitis C and Human Immunodeficiency syndrome causing the increase in cases of cirrhosis[11].

MATERIALS AND METHODS

Slides / paraffin blocks of liver biopsies from patients under 15 years of age. the cases were of two categories i.e. retrospective & prospective.

Retrospective:

1. Slides / paraffin blocks of liver biopsies received during last 10 years in the Department of

Pathology, Basic Medical Science Institute (BMSI), Jinnah Postgraduate Medical Center, Karachi.

2. Slides / paraffin blocks of liver biopsies received in Department of Pathology, National Institute of Child Health (NICH) Karachi during last 7 years.

Prospective: Slides / paraffin blocks of liver biopsies received during last 10 years in the Department of Pathology, Basic Medical Science Institute (BMSI), Jinnah Postgraduate Medical Center and National Institute of Child Health (NICH) Karachi. A clinical protocol including the particulars about the patients name, age , sex and diagnosis were obtained from the surgical pathology registers, request cards and copies of report.

RESULT

The distribution of 41 cases of cirrhosis of liver, according to age & sex . the maximum 22 (53.77 %) youngest case in 0-5 years ,13 (31.7%) cases in 6-10 years & 6 (14.6%) cases were found in 11-15 year age group.

Table No.1: Showing causes of Liver Cirrhosis

Presenting in Infancy Viral	Presenting in Childhood
Cytomegalovinus	**Infectious**
Rubella	Chronic Hepatitis B+ _ delta
Herpes simplex	Chronic Hepatitis C
Hepatitis B	**Metabolic/genetic**
Delta Hepatitis	Alpha-I-antitrypain
Bacterial	deficiency
Syphilis	Cystic fibrosis
Metabolic/Genetic	Wilson disease
Alpha-Lantitypsin deficiency	Indian childhood cirrhosis
Galactosemia	Hepatic porphyria
Fruclosemia	**Hepatobiliary anatomic**
Tyrosinosia	Choledochal cyst
Glycogen storage disease type 3,4	Intrahepatic cystic biliary
Niemann-Pick disease	Dilation (Caroli disease)
Wolman disease	Congenital hepatic fibrosis
Idiopathic	Sclerosing cholangitis
Neonatal hepatitis	**Toxic/drug**
Familial intrahepatic cholestasis	Malnutrition
Biliary trec abnormalities	Hepatotoxic drug
Extrahepatic biliary atresia	
Arteriohepatic dysplasia	
Intrahepatic duct paucity	
Choledochal cyst	
Vascular	
Congestive cardiac failure	
Constrictive paricarditis	
Veno-occlusive disease	
Budd-Chiari syndrome	
Toxic	
Parenteral nutrition	

Table No.2: Showing age and sex Differentiation in Young Population

Age	Male	%	Female	%	Total	%
0-5	16	55..8	6	50.0	22	53.7
6-10	7	24.1	6	50.0	13	31.7
11-15	6	20.1	O	0	6	14.6
Total	29	100	12	100	41	100

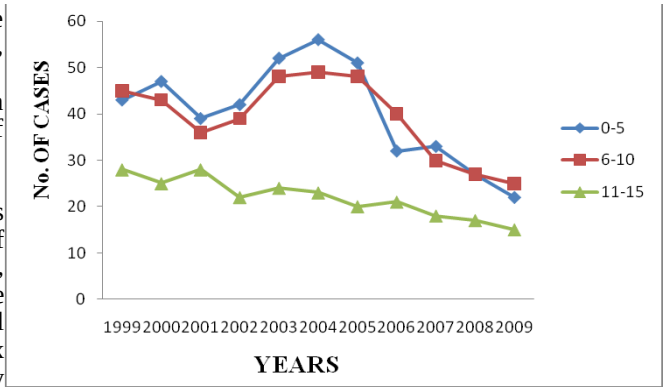

Figure 1: Showing year wise distribution of 41 cases reported for Physiological Liver Cirrhosis and Hepatitis

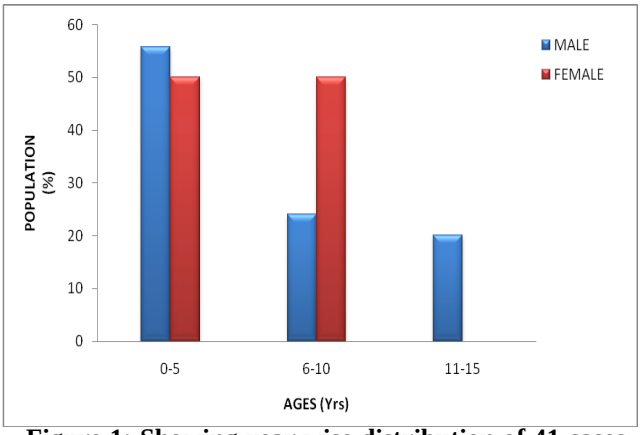

Figure 1: Showing year wise distribution of 41 cases reported for Physiological Jaundice and Hepatitis

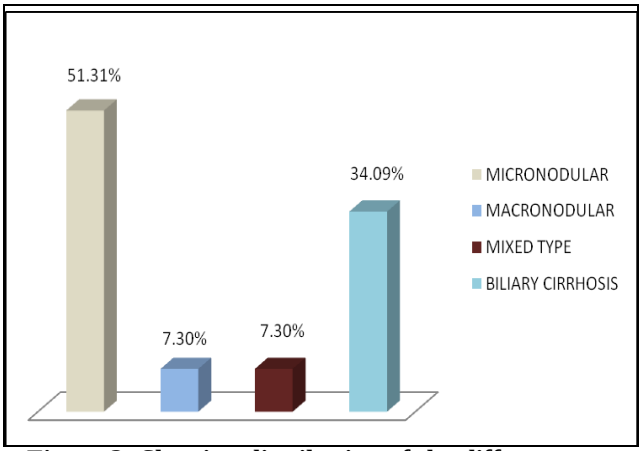

Figure 2: Showing distribution of the different types of Liver Cirrhosis in 41 cases

DISCUSSION

Hepatitis is associated with the necrosis of liver cells with fibrosis and is a major cause of liver diseases[12,13]. Severity of inflammation and necrosis with parenchymal fibrosis was published in Hepatology as histology activity index (HAI) in 1981[14]. Chronic persistent hepatitis has a generally good prognosis as

compare to Chronic aggressive hepatitis which can cause liver cirrhosis[15]. This may lead to portal hyper tension and liver failure. The primary causes of cirrhosis of the liver in infants and children in many parts of the world are hepatitis and congenital malformation of the biliary tree[16]. There are various types of liver cirrhosis reported in children (Fig.2) in which most of the cases were of macronodular type. This type of cirrhosis can occur after any disease that causes liver cell death. Exactly why the regenerating nodules are not able to replace the function of the liver is not clear, although it may be the scarring itself that prevents the functional recovery. The disease is not entirely benign in children, more clinical cases are being diagnosed due to the increased age of those susceptible, which is paradoxical to childhood infection where the majority of infections are subclinical[17].

CONCLUSION

There was over all decrease in tendency of the disease with increased age & male to female ratio was 2.4:1, with male predominance. Our results indicate that the incidence of cirrhosis is high in children with chronic hepatitis, especially of the autoimmune type, and that cirrhosis may occur early, irrespective of cause.

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