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ORIGINAL ARTICLE

Analysis of Liver Biopsies in Children- A Histopathological Study

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***ABSTRACT*:**
Background: Liver disease in pediatrics is one of the most significant causes of morbidity and mortality in this age group. The present study was aimed at determining different pattern of liver needle biopsy in children. **Materials & Methods:** The present study was conducted in the department of Pathology. It included 382 liver biopsies of children of both gender. In all patients liver biopsies were evaluated. **Results:** Out of 382 patients, males were 202 and females were 180. The difference was non- significant (P-0.13). Age group 1month- 1 year had 190 patients, 2-5 years had 85 patients, 6-10 years had 65 patients and >11 years had 42 patients. The difference was significant (P-0.01). Common liver diseases in children were biliary tract atresia (110) followed by chronic hepatitis (92), steatosis (73), neonatal hepatitis (41), cirrhosis (38), metabolic disease (12), granulomatous hepatitis (8), CMV infection (5) and histiocytosis (3). The difference was significant (P-0.01). **Conclusion:** Liver biopsy is useful and informative diagnostic tool in cases of children liver diseases. Common findings were hepatitis, steatosis, CMV infection etc.
Key words: Histiocytosis, Liver biopsy, Neonatal hepatitis.

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INTRODUCTION

Liver disease in pediatrics is one of the most significant causes of morbidity and mortality in this age group and includes a broad spectrum of disorders such as infections, developmental abnormalities and metabolic and neoplastic disorders that finally result in hepatic dysfunction and cirrhosis. Biliary atresia and neonatal hepatitis are the two most common causes of cholestasis in the neonatal period.[1]

Main liver diseases affecting children are biliary atresia, alpha 1-antitrypsin deficiency, autoimmune hepatitis, hepatitis A, hepatitis B, hepatitis C, Wilson's disease etc. General symptoms of liver disease include abdominal pain (located on the right side of the body, beneath the ribs), abnormal stools, flu-like symptoms (e.g., fatigue, nausea, vomiting, muscle or joint pain, fever), loss of appetite, swelling of abdomen and/or legs.[2]

The Child-Pugh score consists of five clinical features and is used to assess the prognosis of chronic liver disease and cirrhosis. The Child-Pugh score was originally developed in 1973 to predict surgical outcomes in patients presenting with bleeding esophageal varices. Acute liver failure occurs when liver cells are damaged significantly and are no longer able to function. Potential causes include: Acetaminophen overdose. Taking too much acetaminophen (Tylenol, others) is the most common cause of acute liver failure. If you have acute liver failure, common complications include bacterial and fungal infection and low blood sugar. Swelling of the brain is another side effect of acute liver failure. It is also one of the most serious. Confusion, abdominal swelling, and abnormal bleeding are also common.[3]

Treatment modalities differ among each condition; therefore, it is obvious that an early and correct diagnosis has a crucial role in the proper management of these children. Various diagnostic tools including liver function tests, enzyme assays, or imaging techniques are available for the evaluation of liver disorders, but although liver biopsy is an invasive method, it is the corner stone for a precise diagnosis and differentiates between the foregoing conditions.[4] The present study was aimed at determining different pattern of liver needle biopsy in children.

MATERIALS & METHODS

The present study was conducted in the department of Pathology. It included 382 liver biopsies of children of both

gender. Inclusion criteria included abnormal liver function tests, jaundice, unexplained hepatosplenomegaly and the evaluation of iron storage in major thalassemia.
All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee. The biopsies were taken by the use of menghini needles and were immediately fixed in 10% formalin solution. After processing in an automated tissue processor, paraffin-embedded blocks were serially sectioned and were then stained by H & E, trichrome and PAS with and without diastase methods. Slides showed less than three portal spaces considered as inadequate specimens. In cases of chronic hepatitis, the Histological Activity Index (HIA) scoring system was used for grading and staging the disease. The evaluation of iron storage was performed according to Marx and Sindram hepatic iron scoring. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 382		
Males	Females	P value
202	180	0.13

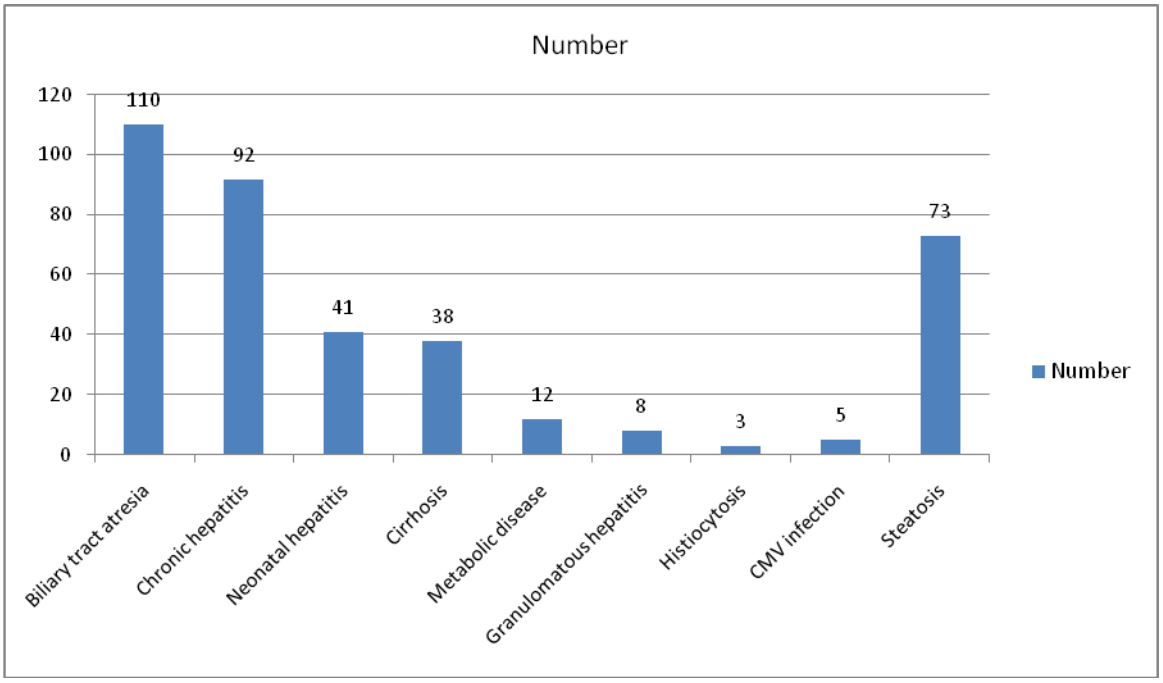
Table I shows that out of 382 patients, males were 202 and females were 180. The difference was non- significant (P-0.13).

Table II Age wise distribution of patients

Age group	1m-1 year	2-5 years	6-10 years	>11 years	P value
Number	190	85	65	42	0.01

Table II shows that age group 1month- 1 year had 190 patients, 2-5 years had 85 patients, 6-10 years had 65 patients and >11 years had 42 patients. The difference was significant (P-0.01).

Graph I Liver diseases in patients



Graph I shows that common liver diseases in children were biliary tract atresia (110) followed by chronic hepatitis (92), steatosis (73), neonatal hepatitis (41), cirrhosis (38), metabolic disease (12), granulomatous hepatitis (8), CMV infection (5) and histiocytosis (3). The difference was significant (P-0.01).

DISCUSSION

For patients who suffer from hepatosplenomegaly and present with an abnormal liver function test or unexplained jaundice, a liver biopsy is the best and the only way to attain the correct diagnosis. In this regard, information on the patient's medical history, physical examinations, biochemical tests and viral and autoimmune markers may be helpful and valuable. In this study we assessed cases of liver biopsies in children.

In this study, out of 382 patients, males were 202 and females were 180. Age group 1month- 1 year had 190 patients, 2-5 years had 85 patients, 6-10 years had 65 patients and >11 years had 42 patients. This is similar to Shakoor KA.[5]

Hepatitis has a broad spectrum of presentations that range from a complete lack of symptoms to severe liver failure. The acute form of hepatitis, generally caused by viral infection, is characterized by constitutional symptoms that are typically self-limiting. Chronic hepatitis presents similarly, but can manifest signs and symptoms specific to liver dysfunction with long-standing inflammation and damage to the organ.[6]

Neonatal hepatitis is inflammation of the liver that occurs only in early infancy, usually between one and two months after birth. About 20 percent of the infants with neonatal hepatitis are infected by a virus that caused the inflammation before birth by their mother or shortly after birth. These include cytomegalovirus, rubella (German measles), and hepatitis A, B or C viruses. In the remaining 80 percent of the cases no specific virus can be identified as the cause, but many experts suspect that a virus is to blame.[7]

We found that common liver diseases in children were biliary tract atresia, chronic hepatitis, steatosis, neonatal hepatitis, cirrhosis, metabolic disease, granulomatous hepatitis, CMV infection and histiocytosis. Similar results were seen in study by Obafunwa et al.[8]

Infants with giant cell hepatitis usually recover (80 percent of cases) with little or no scarring to their liver. Their growth pattern resumes as bile flows normally into the small intestine for digestion and to absorb vitamins. About 20 percent of the infants with neonatal giant cell hepatitis develop chronic liver disease and cirrhosis.[9] Their liver becomes very hard, due to the scarring, and the jaundice does not disappear by six months of age. Infants who reach this point in the disease eventually will require a liver transplant. Because of the blockage of the bile ducts and the damage caused to liver cells, infants with chronic neonatal hepatitis will not be able to digest fats and will not be able to absorb vitamins A, D, E and K. The lack of vitamin D leads to poor bone and cartilage development (rickets). Vitamin A is also needed for normal growth and good vision. Vitamin K deficiency is associated with easy bruising and a tendency to bleed, whereas the lack of vitamin E results in poor coordination.[10]

CONCLUSION

Liver biopsy is useful and informative diagnostic tool in cases of children liver diseases. Common findings were hepatitis, steatosis, CMV infection etc.

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