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# COMMON CAUSES OF LIVER DISEASES AMONG CHILDREN ACCORDING TO LIVER BIOPSIES

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**Abstract:**

***Objectives:*** *There is comprised of pathology of diseases of liver among children as compared to the adults. This research work reviewed the information gathered from liver biopsies, as well as other supplementary examination for the determination of frequent reasons of liver diseases in children of our region.*

***Methodology:*** *There were total 80 performed liver biopsies from June 2016 to March 2019 for the identification of various diseases associated with the liver among children at the Pediatric Unit of General Hospital, Lahore with addition of other supplementary tests according to the requirement.*

***Results:*** *Different kinds of the inborn errors which were congenital for metabolism made the main proportion of the liver complications in the studied population (41.0%), followed by different kinds of the congenital familial intra-hepatic cholestasis. Auto-immune hepatitis was responsible for 7.50% patients and it was very common diagnosed in the patients having more than 2 years of age.*

***Conclusion:*** *Biopsies of liver with the guidance of ultrasound is very secure method. We took the suitable sample of biopsy with the usage of spring loaded needles. Hereditary, familial reasons for the diseases of liver were much frequent, which required struggles for identification and treatment of such complicate disease which can lead to high rate of mortality.*

***Key Words:*** *Biopsy, ultrasound, supplementary, methodology, determination, diagnosis.*

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## INTRODUCTION:

The complications of liver in pediatrics are the main reason of high rate of morbidity as well as mortality. Hepatology of pediatrics continues to grow as a critically vital discipline in medical field. This important transformation is the outcome of the high use of transplantation of liver among children and very deep research on pediatric patients [1]. There is distinctive epidemiology in liver diseases among pediatrics as compared to the aspects present in adult patients. This is much vital to obtain awareness of the current hepatobiliary abnormality's spectrum in children of our region.

There are different tools of diagnosis as tests to check liver function, enzyme essays and imaging methods, present for the assessment of liver complications but biopsy of liver is an invasive procedure and it is foundation for accurate diagnosis of the disease [2-5]. Therefore this current research work totally relied on evaluating the findings of liver biopsies performed for pediatrics, in association with the other examinations as needed for the determination of the available pattern of hepatobiliary anomalies among pediatrics appearing in our institute. Most of the patients were present with the chronic complaints, we carried out this research work for the revision of the reasons for chronic complications of liver in children of our region.

## METHODOLOGY:

In the duration of this research work from June 2016 to March 2019, there was conduction of 80 liver biopsies for the identification of different reasons for various diseases of liver. This research work carried out in Pediatric Department of General Hospital, Lahore which is a tertiary health care hospital in this capital city of Punjab. This hospital also covers the patients from other surrounding areas. In actual the screening of the samples to be submitted for biopsies of liver was carried out only when there was requirement to prove the main diagnosis, or to evaluate the extent of disease in such a way that it have impact on the applied treatment, majority of the patients with clear diagnosis were free from this very procedure. We carried out the basic investigations in laboratory as viral and immune markers, level of alpha-1 anti-trypsine & copper profile, level of serum ferritin, serum uric acid and lipid profile and images procedures in all the patients of this research work.

We also carried out the endoscopic evaluation when needed. We exempted the patients present with the viral hepatitis as well as the patients present with the proper copper diagnostic profile. We used only the spring loaded needle which was disposable under the guidance of ultrasound with the provision of the simple sedation with the use of intravenous diazepam. We preserved the samples initially in 10.0% formalin, then analyzed in the laboratory of Gastroenterology center with the utilization of the standard of Eosin and hematoxylin stain.

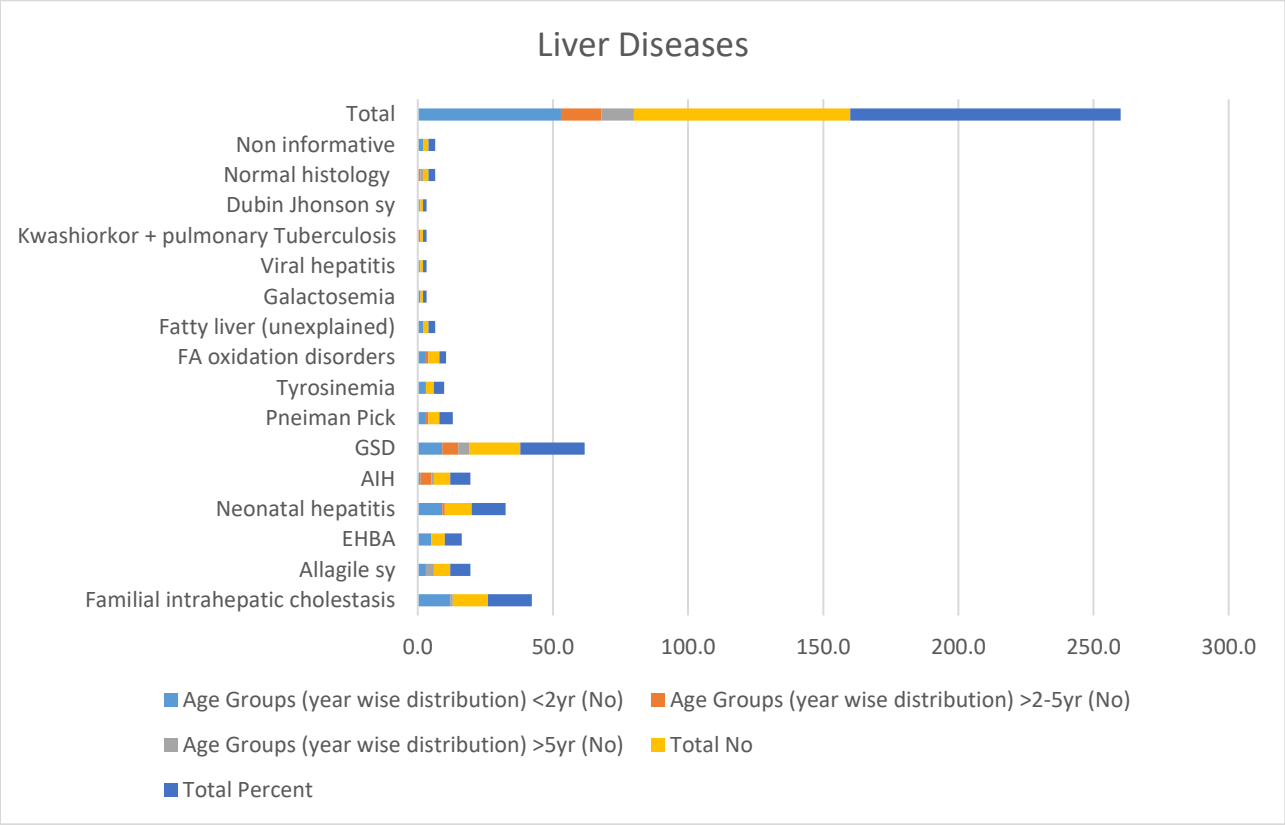
## RESULTS:

In the duration of this research work, there was conduction of total 80 liver biopsies. Male patients outnumbered the female patients with a ratio of 1.4: 1. The group with the younger age (less than two year) formed greater than 50.0% of assessed patients. Table-1 displays that different kinds of the congenital metabolism's errors made the large group.

**Table-I: Distribution of various liver diseases according to the age.**

| Liver disease | Age Groups (year wise distribution) | | | Total | |
|---|---|---|---|---|---|
| | <2yr (No) | >2-5yr (No) | >5yr (No) | No | Percent |
| Familial intrahepatic | 12.0 | - | 1.0 | 13.0 | 16.25 |
| Allagile sy | 3.0 | - | 3.0 | 6.0 | 7.50 |
| EHBA | 5.0 | - | - | 5.0 | 6.25 |
| Neonatal hepatitis | 9.0 | 1.0 | - | 10.0 | 12.50 |
| AIH | 1.0 | 4.0 | 1.0 | 6.0 | 7.50 |
| GSD | 9.0 | 6.0 | 4.0 | 19.0 | 23.75 |
| Pneiman Pick | 3.0 | 1.0 | - | 4.0 | 5.00 |
| Tyrosinemia | 3.0 | - | - | 3.0 | 3.75 |
| FA oxidation disorders | 3.0 | 1.0 | - | 4.0 | 2.50 |
| Fatty liver (unexplained) | 2.0 | - | - | 2.0 | 2.50 |
| | 1.0 | - | - | 1.0 | 1.25 |

| | | | | | |
|---|---|---|---|---|---|
| Viral hepatitis | - | - | 1.0 | 1.0 | 1.25 |
| Kwashiorkor + pulmonary Tuberculosis | - | 1.0 | - | 1.0 | 1.25 |
| Dubin Jhonson sy | - | - | 1.0 | 1.0 | 1.25 |
| Normal histology | - | 1.0 | 1.0 | 2.0 | 2.50 |
| Non informative | 2.0 | - | - | 2.0 | 2.50 |
| Total | 53.0 | 15.0 | 12.0 | 80.0 | 100.00 |




The diseases of glycogen storage alone made 24.0% of total assessed patients, all the patients presenting with hepatomegaly. Unusually in sixteen out of nineteen patients, there was advanced fibrosis or/and recognized cirrhosis in their biopsies. The particular histocytes in the specimens of biopsies helped the diagnosis of different diseases of lipid storage. Remaining inborn errors displayed either intra-hepatic cholestasis with different degrees of degeneration of liver cell or a fatty liver's picture.

The 2nd most frequent diagnosis in samples was intra-hepatic cholestasis diseases followed by hepatitis of neonates, of which we diagnosed ten patients, with a male to female ratio of 1.0: 1.5, and all these patients were less than 2 year of age except only one who present with 3 year of age with recognized liver cirrhosis. Total 2 babies were present with positive serology for the CMV, appearing with the hepatitis and hemolytic anemia. We diagnosed the 5 patients of extra-hepatic biliary atresia, forming 6.20% of total patients, with a range of age from six weeks to four months. Auto-immune hepatitis created 19.0% of diagnosis above 2 years of age, 2nd only to the disease of glycogen. One patients with 5 year of age was present with sickle thalassemia, cholestasis, and the histology liver a picture of chronic immune-hepatitis. Total 2 samples were normal, 1 was the 5 year old child without explained hypoglycemia, and other was a twenty month aged old girl.

## DISCUSSION:

Liver biopsy is an invasive method which also has well-acknowledged risks [5-7]. It is not in regular practice in our country because of the high costs. There is normally avoidance from the biopsy procedure and

most of the patients with severe condition or suffering from cirrhosis or fibrosis have to undergo other laboratory tests for the diagnosis of the complication. There is exemption of this procedure for the patients who are suffering from Wilson's disease, affected by hepatitis and patients with great risk to acquire these liver diseases. Patients suffering from thalassemia are not normally assessed with the use of liver biopsy as the procedures of transplant are not yet present. In assessed samples of this research work, we found the preponderance of different anomalies of metabolism as reasons for the chronic diseases of liver including storage disorders as disorders of lipid and glycogen storage, in addition to the anomalies of amino-acids and metabolism of fatty acid. The recorded patients of diseases of liver because of metabolic anomaly formed 41.0% of the whole studied specimens, Barakat [8] in his research work conducted in Egypt discovered that 33.0% chronic diseases of liver in pediatrics were the outcome of metabolic disorders, whereas Monajemzadeh discovered it as 13.80% in the children of Iran [9], and it made no higher than 4.0% in the study of Muthuphei [10], Obafunwa [11] and Mackenjee [12].

Storage abnormalities alone formed 8.50% of these diseases in the research work of Ramakrishna conducted in India [13], whereas these were accountable for 28.70% of our studied patients. The reasons why these metabolic complications are more prevalent in this research work is that consanguinity is very frequent in our regions. Now a days, there is a serious concern for the diagnosis of the liver diseases with the advancement of medical field. Very low occurrence of liver complications in some research works possibly refers to the low rate of disease diagnosis. 2nd diagnosis in the rate of occurrence was familial intra-hepatic cholestasis, in the forms of both syndromic & non-syndromic, which is accountable for 23.70% patients, whereas it was 9.250% in the survey conducted in Oman [14] and Monajemzadeh [9] discovered a incidence of 6.20% familial intra-hepatic cholestasis, and some research work, there was not any mentioning as in the study of Ramakrishna [13] and Muthuphei [10].

The diagnosis of hepatitis is neonates was with same incidence as in studies of Ahmed [2] and Monajemzadeh [9]. Whereas the diagnosis of extra-hepatic biliary atresia was much low in this current series 6.250% much different from the research work of Ahmed 20.0%, and 11.80% in the research work conducted in Oman [14]. There were total six patients suffering from auto-immune hepatitis, forming 7.50%, which is much close to Yachha in his research work conducted in India, discovered a 5.0% rate of prevalence in pediatrics [15] and 4.50% prevalence in adults with these chronic diseases of liver [11].

## CONCLUSION:

Congenital metabolism's error are the main cause of liver diseases in pediatric patients, followed by the familial intra-hepatic cholestasis. Biopsy of liver is very effective for diagnosis and improvement of the expertise among pediatric patients is much mandatory.

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