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Clinico pathological study of hepatomegaly in children

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Abstract
Hepatomegaly can represent intrinsic liver disease or may be the presenting physical finding of a generalized disorder. It is important to realize that the liver is easily palpated in most children at 1-2 cm below the right costal margin. A normal liver should feel soft and is easily moveable upon inspiration. Hence based on the literature this study has been planned to review various Clinicopathological factors of hepatomegaly in children and study the various cases of hepatomegaly in children.
This study is planned in katihar medical college and hospital Katihar in the year June 2004to July 2005. Total 50 children's with Children with increased liver span were admitted in the study. All patients were subjected to routine investigations like complete hemograme, urine analysis, stool examination, LFT, viral markers and CXR.
From the present study it can be concluded that the most common etiological factor was infections, of which viral hepatitis tops the list. Most common symptom is was fever. Most common associated finding was splenomegaly. Majority of cases had mild hepatomegaly and only few cases had massive hepatomegaly due to rare causes like storage disorders.

Keywords: hepatomegaly, splenomegaly, histopathology, liver span, storage disorders

Introduction

Hepatomegaly is the condition of having an enlarged liver [1]. It is a non-specific medical sign having many causes, which can broadly be broken down into infection, hepatic tumours, or metabolic disorder. Often, hepatomegaly will present as an abdominal mass. Depending on the cause, it may sometimes present along with jaundice [2]. Symptoms having to do with hepatomegaly can include several, among them the individual may experience some weight loss, poor appetite and lethargy (jaundice and bruising may also be present) [2].

Hepatomegaly can represent intrinsic liver disease or may be the presenting physical finding of a generalized disorder. It is important to realize that the liver is easily palpated in most children at 1-2 cm below the right costal margin. A normal liver should feel soft and is easily moveable upon inspiration.

An enlarged liver rarely presents alone and usually accompanies other clinical signs and symptoms based on the underlying pathophysiology. Associated signs and symptoms to watch out for in the pediatric population include shortness of breath, fatigue, abnormal bruising, jaundice, loss of consciousness, seizures, diarrhea, and splenomegaly.

Causes of hepatomegaly in children

i) Infectious/Inflammatory
- a) TORCH infections
- b) Viral hepatitides (all)
- c) Hepatic abcess
- d) Visc. larval migrans, schistosomiasis, liver flukes
- e) Toxins, drugs
- f) Biliary obstruction

ii) Congestive
- a) Cirrhosis/Wilson's
- b) Stenosed/thrombosed portal/splenic v.
- c) Myeloid metaplasia
- d) Vinyl chloride
- e) Biliary atresia
- f) CHF (right-sided)

iii) Storage
- a) Glycogen storage diseases
- b) GAG-oses
- c) Gaucher's
- d) Neimann-Pick's d.
- e) Porphyrias
- f) Amyloid
- g) Wilson's

iv) Infiltrative
- a) Erythroblastosisfetalis
- b) Metastatic Ca
- c) Histiocytosis
- d) Leukemia, lymphoma
- e) Hepatoma
- f) Hepatic hematopoiesis
- g) Hemochromatosis
- h) Amyloid

v) Intrinsic hepatic dis.
- a) Cirrhosis
- b) Cong. hepatic fibrosis
- c) Multicystic liver/kidney dis.
- d) Hereditary hemorrhagic telangiectasia

vi) Kuppfer cell proliferation
- a) Sepsis
- b) Granulomatous hepatitis
- c) Hypervitaminosis A

The mechanism of hepatomegaly consists of vascular swelling, inflammation (due to the various causes that are infectious in origin) and deposition of (1) non-hepatic cells or (2) increased cell contents (such due to iron in hemochromatosis or hemosiderosis and fat in fatty liver disease).

Suspicion of hepatomegaly indicates a thorough medical history and physical examination, wherein the latter typically includes an increased liver span.

On CT scan, hepatomegaly has been defined as a longitudinal axis > 15.5 cm at the hepatic midline, or > 16.0 cm at the midclavicular line.

Blood tests should be done, importantly liver-function

series, which will give a good impression of the patient's broad metabolic picture. [medical citation needed]
A complete blood test can help distinguish intrinsic liver disease from extrahepatic bile-duct obstruction. An ultrasound of the liver can reliably detect a dilated biliary-duct system, it can also detect the characteristics of a cirrhotic liver. Computerized tomography (CT) can help to obtain accurate anatomical information, in individuals with hepatomegaly.
Treatment of hepatomegaly will vary depending on the cause of the liver enlargement and hence accurate diagnosis is the primary concern. In the case of auto-immune liver disease, prednisone and azathioprine may be used for treatment [3].
In the case of lymphoma the treatment options include single-agent (or multi-agent) chemotherapy and regional radiotherapy, also surgery may be an option in specific situations. Meningococcal group C conjugate vaccine are also used in some cases [5].
In primary biliary cirrhosis ursodeoxycholic acid helps the bloodstream remove bile which may increase survival in some affected individuals [5].
Hence based on the abve literature this study has been planned to review various clinic pathological factors of hepatomegaly in children and study the various cases of hepatomegaly in children.

Methodology
This study is planned in katihar medical college and hospital Katihar in the year June 2004 to July2005. Total 50 children's with Children with increased liver span were admitted in the study. All patients were subjected to routine investigations like complete hemograme, urine analysis, stool examination, LFT, viral markers and CXR.
All patients were informed consents. The aim and the objective of the study were conveyed to patients.

Result & Discussion
The data from the 50 child patients included in the study were collected and presented as below. The findings were discussed in comparison with the previous study reported findings.
The ages of the patients are from 1 year to 12 years.

Table 1: Etiology of the condition

Etiology	No. of Cases
Infections	20
congestion	16
Hemolysis	6
Neoplastic	3
Cholestatic	2
Metabolic	1
Miscellaneous	1
Total	50

Table 2: Infections Types for 20 cases

Etiological agent	No. of Cases = 20
Viral infections	10
Bacterial infections	7
Protozoal infections	2
Others	1
Total	20

Table 3: Grades of Hepatomegaly

Grade	No. of Cases
Mild (not up to umbilicus)	30
Moderate (up to umbilicus)	15
Severe (crossing umbilicus)	5

Table 4: Signs and symptoms:

Signs and symptoms	No. of Cases
Splenomegaly	40
Fever	30
Jaundice	16
Anemia	15
CCF	12
Anasarca	10
Bleeding	4
Loss of consciousness	3
Convulsions	2
Gen lymphadenopathy	2
Mental retardation	1
Microcephaly	2

Among infections viral infection tops the list followed by bacterial, protozoal. Involvement of liver in tuberculosis is common. There are 30 cases of typhoid fever associated with hepatomegaly and elevated liver enzymes, one case had jaundice. Similar reports were given by Ramachandran, Godfrey [6], ER Siddesh [7]. According to the study of hepatic manifestations in typhoid fever by K Jagadish, AR Patwar, S Sarin [8]. Hepatomegaly in typhoid cases was 40. HIV virus is the major determiment of hepatomegaly according to Halzkis *et al*. [9]. Hepatomegaly along with splenomegaly was observed in 70 cases and raised hepatic enzymes were found in 10 cases with falciparumvivax. According to SY Bhave, SV Jhoshi<V ward, HcPhar [9] Nadgir *et al* [10].
Fever was the commonest symptom which lead to seek the medical advise. 50% of fever cases were associated with infection and 5% were associated with neoplasm. Jaundice was associated in 16 cases. Out of which18% had combined hyperbilirubinemia, 3% conjugated and12% unconjugated bilirubin. Splenomegaly was the commonest associated finding in40 cases, most of them were due to infections and congestion and associated with mild splenomegaly. Most of the metabolic, neoplastic and hemolytic diseases associated with massive splenomegaly. Dr. Reddy YR and Jayalakshmi [11] in their study of splenomegaly in infants and children found that hepatomegaly.

Conclusion
From the present study it can be concluded that the most common etiological factor was infections, of which viral hepatitis tops the list. Most common symptom is was fever. Most common associated finding was splenomegaly. Majority of cases had mild hepatomegaly and only few cases had massive hepatomegaly due to rare causes like storage disorders.

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