

An Etiological and Clinical Study of Hepatomegaly among Patients of Region around Lucknow, UP

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ABSTRACT

Objective: To study the etiological and clinical spectrum of hepatomegaly among patients of the region around Lucknow.

Methods: This was a hospital based observational study conducted in the Department of Medicine, Prasad Institute of Medical Sciences, Lucknow. Patients of age 16-65 years were included in the study. Each patient of the study population had been subjected to detailed history that included symptomatology, history of alcohol consumption, drug history, high risk behavior etc.

Results: About one third of patients were between 21-30 years of age (31.3%). The most common cause of hepatomegaly was acute viral hepatitis (37.5%). Pain in abdomen was the most common clinical manifestation (89.1%) among hepatomegaly patients. The histopathological finding indicated that reticulum frame work was affected among 26.6% patients. Amoebic liver abscess cause of hepatomegaly was among males. Amoebic hepatitis cause of hepatomegaly was higher among females (75%) than males (25%). However, acute viral hepatitis cause of hepatomegaly was observed to be higher among males (79.2%) compared to females (20.8%).

Conclusion: Hepatomegaly varies from comparatively benign condition like fatty liver to fatal condition like hepatocellular carcinoma. The most common cause of hepatomegaly was acute viral hepatitis and most common presentation was pain in abdomen. Multicenter study with large sample size is warranted to develop more insights about diagnosis and management of hepatomegaly.

Key words: Hepatomegaly, Etiological, Histopathological

INTRODUCTION

The liver is one of the vital organs of the body and plays critical role during synthesis, metabolism, excretion, detoxification and immunity. Although it is only 1/40th of adult body weight, it receives 1/4th of total circulating blood. This preferential vascular organ also receives exceptional types of blood supply; the liver receives systematic blood through hepatic artery and venous blood from the gut through portal vein. This allows the liver to interact with various noxious materials, food products, and drug metabolites that are carried into the liver through portal circulation [1,2].

Thus, inflammation, infection and malignant transformation of liver may happen due to various causes. These pathological factors may also induce hepatomegaly. The common causes of hepatomegaly include hepatitis, liver abscess, congestive cardiac failure (CCF), fatty liver, primary and secondary carcinoma of liver, cystic disease, amyloidosis, tuberculosis, typhoid fever, malaria, constrictive pericarditis and cardiac tamponade, Budd-Chiari syndrome, glycogen storage disease, biliary obstruction, Reidel's lobe, low lying diaphragm and normal variant[3,4].

The liver can be easily measured using ultrasound; however, common measurement techniques provide linear measurements rather than volume measurements, and there is lack of clarity in the literature around ultrasound measurement methods and cut-off values for normal liver size using 2D ultrasound. A

review by Childs et al[5] showed a paucity of rigorous research in this area; many published studies investigated time consuming techniques or techniques on equipment that is now out of date. Despite recent advances in 3D ultrasound imaging, volume measurements of liver size using 3D ultrasound are impractical and time consuming, requiring extensive ultrasound skill, and the marrying together of multiple 3D sweeps, which is technically difficult [6,7].

The authors were unable to locate any cut-off values for normal liver size using 3D ultrasound or MRI imaging. A cut-off score for normal liver volume using CT is available. Linguraru et al [8] described an H-score, which is dependent on CT calculated liver volume and corrected for body surface area. They determined that an H-score of greater than 0.92 L/m² could be used to identify mild hepatomegaly. The lack of available, validated, quantitative measurements means that radiologists commonly diagnose hepatomegaly from imaging modalities based on visual evaluation, and comparison with landmarks such as the hemi diaphragm and lower costal cartilage, and also by displacement of internal abdominal organs.

The present study was designed to study the etiological and clinical study of hepatomegaly among patients of the region around Lucknow.

MATERIAL AND METHODS

This was a hospital based observational study conducted in the Department of Medicine, Prasad Institute of Medical Sciences, Lucknow. The study was approved by the Ethical Committee of the Institute and consent was taken from each participant before including in the study. Patients of age 16-65 years were included in the study.

Each patient of the study population had been subjected to detailed history that included symptomatology, history of alcohol consumption, drug history, high risk behavior (illicit/intravenous drug abuse,

sexual promiscuity, tattooing) blood/blood product transfusion, needle prick or other modes of blood borne transmission, history of travel, consumption of contaminated food and water, systemic illness and detailed family history of significant systemic illnesses. Detailed general examination including anthropometric measurements and systemic examination was done in each patient.

Depending on the clinical diagnosis based on detailed history and clinical examination, patients were subjected to hematological and biochemical investigations as required and when feasible. Hematological parameters included hemoglobin, complete blood counts, coagulation profile, peripheral blood smear for parasites, stool examination, Widal, viral markers for hepatitis, serology for dengue and amoebiasis, blood urine sputum cultures were done. Abdominal ultrasonography was performed in all the patients while chest skiagram, electrocardiography and echocardiography were done when required.

Statistical analysis

The descriptive statistics such as frequencies, percentages and mean±SD are presented. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc. USA).

RESULTS

About one third of patients were between 21-30 years of age (31.3%) followed by 41-50 (29.7%), 31-40 (21.9%), >50 (12.5%) and ≤20 (4.7%) years. The mean age of patients was 38.34±12.22 years ranging from 16 to 65 years. More than half of patients (68.8%) were males (Table-1).

Table-1: Age and sex distribution of Hepatomegaly patients

| Age and sex | No. (n=64) | % |
|-----------------|---------------------|------|
| Age in years | | |
| <20 | 3 | 4.7 |
| 21-30 | 20 | 31.3 |
| 31-40 | 14 | 21.9 |
| 41-50 | 19 | 29.7 |
| >50 | 8 | 12.5 |
| Mean±SD (Range) | 38.34±12.22 (16-65) | |
| Sex | | |
| Male | 44 | 68.8 |
| Female | 20 | 31.3 |

Table-2: Distribution of causes of Hepatomegaly

| Associated diseases | No. (n=64) | % |
|----------------------------|------------|------|
| Acute viral hepatitis | 24 | 37.5 |
| Chronic active hepatitis | 3 | 4.7 |
| Amoebic hepatitis | 4 | 6.3 |
| Amoebic liver abscess | 6 | 9.4 |
| Cirrhosis of liver | 8 | 12.5 |
| Malignancy of liver | 3 | 4.7 |
| Obstructive jaundice | 2 | 3.1 |
| Congestive cardiac failure | 4 | 6.3 |
| Others | 10 | 15.6 |

Table-3: Distribution of clinical manifestations of Hepatomegaly patients

| Clinical manifestations# | No. (n=64) | % |
|--|------------|------|
| Pain in abdomen | 57 | 89.1 |
| Yellow discoloration of eyes and urine | 36 | 56.3 |
| Distension of abdomen | 22 | 34.4 |
| Nausea and vomiting | 34 | 53.1 |
| Anorexia and flatulence | 55 | 85.9 |
| Fever with chills and rigors | 27 | 42.2 |
| Hematemesis and melena | 5 | 7.8 |
| Altered consciousness | 8 | 12.5 |
| Clay colored stool | 9 | 14.1 |
| Itching | 14 | 21.9 |
| Anasarca | 14 | 21.9 |
| Weakness and malaise | 56 | 87.5 |
| Loss of weight | 38 | 59.4 |
| Loose motion and dysentery | 14 | 21.9 |
| Breathlessness | 6 | 9.4 |
| Arthralgia | 4 | 6.3 |
| Loss of libido | 4 | 6.3 |

#Multiple response

The most common cause of hepatomegaly was acute viral hepatitis

Table-5: Gender-wise distribution of causes of Hepatomegaly

| Associated diseases | No. of patients | Male | | Female | |
|----------------------------|-----------------|------|-------|--------|------|
| | | No. | % | No. | % |
| Acute viral hepatitis | 24 | 19 | 79.2 | 5 | 20.8 |
| Chronic active hepatitis | 3 | 2 | 66.7 | 1 | 33.3 |
| Amoebic hepatitis | 4 | 1 | 25.0 | 3 | 75.0 |
| Amoebic liver abscess | 6 | 6 | 100.0 | 0 | 0.0 |
| Cirrhosis of liver | 8 | 5 | 62.5 | 3 | 37.5 |
| Malignancy of liver | 3 | 1 | 33.3 | 2 | 66.7 |
| Obstructive jaundice | 2 | 1 | 50.0 | 1 | 50.0 |
| Congestive cardiac failure | 4 | 3 | 75.0 | 1 | 25.0 |
| Others | 10 | 6 | 60.0 | 4 | 40.0 |

Table-3 shows the distribution of clinical manifestations of hepatomegaly patients. Pain in abdomen was the most common clinical manifestation (89.1%) among hepatomegaly patients. Weakness and malaise were the third most common clinical manifestation (87.5%) among hepatomegaly patients. Anorexia and flatulence were the third most common clinical manifestation (85.9%) among hepatomegaly patients. Arthralgia and Loss of libido were the least common clinical manifestation among hepatomegaly patients each constituted 6.3% (Table-3).

(37.5%). Other causes constituted 15.6% patients. Cirrhosis of liver was the second most common cause of hepatomegaly (12.5%). Amoebic liver abscess was the third most common case of hepatomegaly (9.4%). Chronic active hepatitis and Malignancy of liver were the least common cause of hepatomegaly each constituted 4.7% (Table-2).

Table-4: Distribution of histopathological findings of liver among Hepatomegaly patients

| Histopathological findings | No. (n=64) | % |
|--|------------|------|
| Pan lobular infiltration | 13 | 20.3 |
| Hepatic cell necrosis | 13 | 20.3 |
| Hyperplasia of Kupffer cells | 9 | 14.1 |
| Variable degree of cholestasis | 10 | 15.6 |
| Bile ducts multiplying, elongated dilated with wide lumen | 4 | 6.3 |
| Hepatic cell degeneration | 11 | 17.2 |
| Large hepatocyte with ground glass appearance of cytoplasm | 1 | 1.6 |
| Reticulum frame work | 17 | 26.6 |
| Bridging hepatic necrosis | 3 | 4.7 |
| Hepatic cell regeneration | 6 | 9.4 |
| Cytoplasmic fat vacuoles | 7 | 10.9 |
| Macrophage accumulation with LD bodies | 1 | 1.6 |
| Micro abscess | 2 | 3.1 |
| Sheets of undifferentiated malignant cells | 4 | 6.3 |
| Non-neoplastic changes | 1 | 1.6 |

#Multiple response

The histopathological finding indicated that reticulum frame work was affected among 26.6% patients. Pan lobular infiltration and Hepatic cell necrosis each were in among 20.3% patients. Hepatic cell degeneration was seen in 17.2% patients. Variable degree of cholestasis and Hyperplasia of Kupffer cells was observed in 15.6% and 14.1% patients respectively. Cytoplasmic fat vacuoles were found in 10.9% patients. The percentages of other histopathological findings were less than 10% (Table-4).

Table-5 shows gender-wise distribution of causes of hepatomegaly. Amoebic liver abscess cause of hepatomegaly was among all males. Amoebic hepatitis cause of hepatomegaly was higher among females (75%) than males (25%). However, acute viral hepatitis cause of hepatomegaly was observed to be higher among males (79.2%) compared to females (20.8%).

DISCUSSION

The liver holds a position of singular importance in the system, performing numerous metabolic functions. Hepatomegaly, a very obvious clinical marker of underlying liver pathology, was derived from Greek word hepar (liver) + megas (large). It is abnormal enlargement of the liver that is usually a sign of disease, often discovered by percussion and palpation as part of a physical examination. Causes of liver enlargement are many. Liver size is determined by several factors, including volume of portal blood flow, amount of hepatic venous pressure and resistance, presence of infiltrative processes (e.g., inflammatory, metabolic, neoplastic, and cystic processes), and patency of bile flow. Hepatomegaly may be a presenting sign or symptom of the patient's illness or it may be an incidental finding in patients being examined for various other reasons[9].

The present study was conducted on 64 hepatomegaly patients to evaluate the etiological and clinical study of hepatomegaly among patients of region around Lucknow.

In this study, about one third of patients were between 21-30 years of age (31.3%) followed by 41-50 (29.7%), 31-40 (21.9%), >50 (12.5%) and ≤20 (4.7%) years. The mean age of patients was 38.34±12.22 years ranging from 16 to 65 years. Ghosh et al[10] found that the mean age of the patients was 42.2 years (standard deviation, 3.2 years) with a range of 15 to 80 years. The predominant age group was between 41 and 50 years (29.0%), followed by the age group of 31 to 40 years (24.0%)

and 21 to 30 years (20.0%). There was a male predominancy in patients with hepatomegaly in this study, which support what Khan et al [11] and Ghosh et al [10] have reported about male predominance about hepatomegaly. Ghosh et al [10] found that there were 76.0% were males and 24.0% were females. Childs et al [12] reported that there were 87 (69%) women and 39 (31%) men with ages ranging from 19–78 years with a mean (SD) age of 37 (12.8) years of hepatomegaly patients.

This study observed that the most common cause of hepatomegaly was acute viral hepatitis (37.5%). Other causes constituted among 15.6% patients. Cirrhosis of liver was the second most common cause of hepatomegaly (12.5%). Ghosh et al[10] reported that the most common cause of hepatomegaly was liver abscess followed by CCF, hepatitis, primary hepatocellular carcinoma, secondary carcinoma of liver, cystic diseases of liver, fatty change and Budd-Chiari syndrome. Shennak et al [13] have shown CCF (38.5%), carcinoma of liver (19.6%), acute hepatitis (13.5%), cystic diseases (7.88%), carcinoma of liver (19.6%), fatty change (5.6%), and liver abscesses (2.4%) as major causes of isolated hepatomegaly from a cohort of 800 patients from Jordan. The commonest cause of liver abscess worldwide is amebiasis, but in the developed world pyogenic causes are of increasing importance [14].

This showed that Pain in abdomen was the most common clinical manifestation (89.1%) among hepatomegaly patients. Weakness and malaise were the third most common clinical manifestation (87.5%) among hepatomegaly patients. Ghosh et al [10] observed that abdominal pain (80.0%), loss of appetite (76.0%), general weakness (60.0%) and fever (54.0%) were the common clinical presentations of patients. The other clinical presentations were loss of weight (51.0%), pallor (51.0%), nausea and vomiting (44.0%), jaundice (42.0%) and exertional breathlessness (31.0%).

In the present study, the histopathological finding indicated that reticulum frame work was affected among 26.6% patients. Pan lobular infiltration and Hepatic cell necrosis each were in among 20.3% patients. Hepatic cell degeneration was seen in 17.2% patients. Variable degree of cholestasis and Hyperplasia of Kupffer cells was observed in 15.6% and 14.1% patients respectively. Ghosh et al[2010] revealed that histopathological findings of eight (32%) were consistent with secondary carcinoma of liver, six (24.0%) were primary HCC, three (12.0%) were liver abscess, two (8.0%) fatty liver, one (4.0%) tubercular granuloma and inconclusive findings were seen in five cases (20.0%).

In the present study, amoebic liver abscess cause of hepatomegaly was found among males only. Amoebic hepatitis cause of hepatomegaly was higher among females (75%) than males (25%). However, acute viral hepatitis cause of hepatomegaly was observed to be higher among males (79.2%) compared to females (20.8%).

One of the limitations of this study was small sample size. The studies with larger sample size are required to have more observations.

CONCLUSION

Hepatomegaly varies from comparatively benign condition like fatty liver to fatal condition like hepatocellular carcinoma. The most common cause of hepatomegaly was acute viral hepatitis and the most common presentation was pain in abdomen.

Multicenter study with large sample size is warranted to develop more insights about diagnosis and management of hepatomegaly.

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