

# To Study the Clinical Profile and Etiological Spectrum of Patients with Splenomegaly in a Tertiary Care Centre of North India

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**Abstract-** This cross sectional, observational study was performed in 170 adult patients with splenomegaly who reported to Department of Medicine, Pt. B. D. Sharma, PGIMS Rohtak from may 2014 to april 2015, over a period of 1 year. The patients were evaluated for their complete clinical profile & etiology of splenomegaly. Grading of splenomegaly was done by Hacket's grading. Thorough relevant investigations were carried out. Most patients were below 45 years of age. Most common etiological category of splenomegaly was hematological (54.7%) followed by congestive (24.5%), infectious (15.88%) and other (4.7%) causes. Most common splenomegaly patients belong to hacket's grade II (55%), followed by grade III (28%), grade I (13%) & grade IV(4%). Among hematological etiology chronic myeloid leukemia was most common cause(25.29%). Malaria was the commonest etiology among infectious causes. On clinical examination pallor was present in 87% cases. 44% of patients had hepatomegaly, 26% of patients had icterus., lymphadenopathy was present in 13% patients. We compared the results of our study with other studies & concluded that clinical profile & etiological spectrum of splenomegaly varies from region to region.

**Index Terms-** splenomegaly, Hacket's grading, chronic myeloid leukemia, portal hypertension

## I. INTRODUCTION

A palpable spleen suggests enlargement of the organ and is an important clinical sign produced by diseases affecting the spleen. The incidence and etiology of splenomegaly is strongly dependent on the geographical location. In a patient, splenomegaly should be investigated properly to ascertain the etiology. Causes may vary with diseases prevalent in that area.<sup>1</sup> Differences between developing and developed countries are quite obvious. The causes of splenomegaly even vary between different regions in the same Country.

Till date there are a limited number of studies on the frequency of various causes of splenomegaly. Of these some have been reported from the Indian subcontinent. There appears to be a changing spectrum of splenomegaly in different regions of same country. Some of the diseases that exhibit splenomegaly include chronic myeloid leukemia, acute leukemia, lymphoma, hemolytic anemia, nutritional anemia, chronic liver disease with portal hypertension, malaria, typhoid fever, storage disorders, connective tissue disorders etc. Some studies have documented Haematological disorders to be most common while others have

shown Infectious causes and some congestive causes to be more common.

A variable clinical profile and etiological spectrum has been described in cases of splenomegaly. In spite of such common finding in patients; there are limited studies in India regarding the etiological spectrum of splenomegaly. The different studies have shown different causes for splenomegaly. Therefore we have planned to study cases with splenomegaly at Pt. B. D. Sharma, PGIMS, Rohtak to find the clinical profile and etiological spectrum of these cases.

## II. MATERIAL & METHODS

The study was carried out in the Department of Medicine, Pt. B.D. Sharma, Post Graduate Institute of Medical Sciences, Rohtak. The study was conducted from 1-05-2014 upto 1 year duration. Newly reported cases of >14 yrs of age & detected with splenomegaly on per abdominal examination or on USG abdomen cranio-caudal length of spleen >13cm, were selected. Grading of splenomegaly was done by hacket's grading.<sup>2</sup>

The written informed consent was taken prior to the enrollment in the study from each patient. All the patients were subjected to detailed history regarding recent infections like malaria, fever, weight loss, sweating, pruritis, jaundice, abnormal bleeding/bruising/joint pain, history of alcoholism, trauma, history of neonatal umbilical sepsis, history of residence and travel abroad, high risk sexual behavior, past medical history, drugs etc. Physical examination was done on every patients for size of spleen, hepatomegaly, lymphadenopathy, fever, icterus, bruising, petechiae, for stigmata of liver disease, stigmata of RA/SLE, splinter hemorrhage, retinal hemorrhage, cardiac murmur etc.

Grading was done by Hackett's grading, which is WHO accepted grading & as follows:

Class 0 - Spleen not palpable even on deep inspiration.

Class 1 - Spleen just palpable below costal margin on deep inspiration.

Class 2 - Spleen palpable but not beyond a horizontal line half way between the costal margin and umbilicus.

Class 3 - Spleen palpable more than half way to umbilicus, but not below a line running horizontally through umbilicus.

Class 4 - Spleen palpable below umbilicus but not below a horizontal line between umbilicus and pubic symphysis.

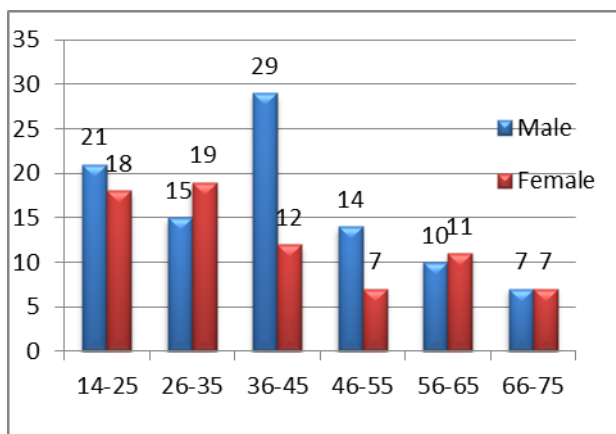
Class 5 - extending more than class 4

Complete hemogram; Red blood cell indices MCV (Mean corpuscular volume), MCH (Mean corpuscular hemoglobin) and MCHC (Mean corpuscular hemoglobin concentration), USG abdomen, chest X ray were performed in every case. Further specific investigations were performed in cases to find out the cause of splenomegaly as warranted by the clinical context and the results of baseline investigations like Bone Marrow examination in hematological cases, upper GI endoscopy in cases of portal hypertension, liver function tests (SGOT, SGPT, SAP, S.Bilirubin, S.Protein) for hepatitis and chronic liver disease; serum Iron studies, vitamin B12 & folic acid assays for type of anemia; anti-nuclear factor (immunofluorescent method) for autoimmune disorder; serological tests and blood culture for enteric fever; viral serologies for HIV, hepatitis B virus, Hepatitis C virus and dengue; immunphenotyping for leukemias & lymphomas; chest X-ray, montoux test for disseminated TB; Hb electrophoresis, DCT, ICT, LDH for hemolytic anemias; BCR-ABL for chronic myeloid leukemia; echocardiography for cardiac evaluation & other investigations according to history & clinical examination of patients.

### III. OBSERVATIONS & RESULTS

The study population consisted of 170 patients with range of 14 to 65 years. There were 96 males and 74 females in the study group with a male to female ratio (M:F) of 1.3:1. Out of 170 cases, 39 cases belong to age group 14-25 years, 34 cases in age group 26-35 years, 41 cases in age group 36-45 years, 21 cases in age group 46-55 years, 21 cases in age group 56-65 years and 14 cases in age group 66-75 years. Approximately 2/3 cases belong to young age group (14-45 years).

**Figure-1 Age & Sex Distribution In Patients of Splenomegaly**

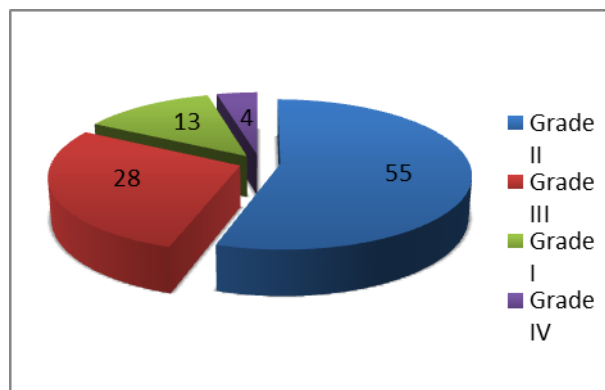


The most common symptom was generalized weakness and fatigue in 77% cases followed by abdominal discomfort (48%), fever(28%), abdominal distension(16%). Bleeding manifestations were observed in 13% of cases. Other symptoms like yellowish Discoloration of sclera & generalised lymphadenopathy were

present in 9% of cases. Out of 176 patients most of the patients presented with anemia and pallor was present in 87% cases, 44% of patients had hepatomegaly, 26% of patients had icterus, lymphadenopathy was present in 13% patients.

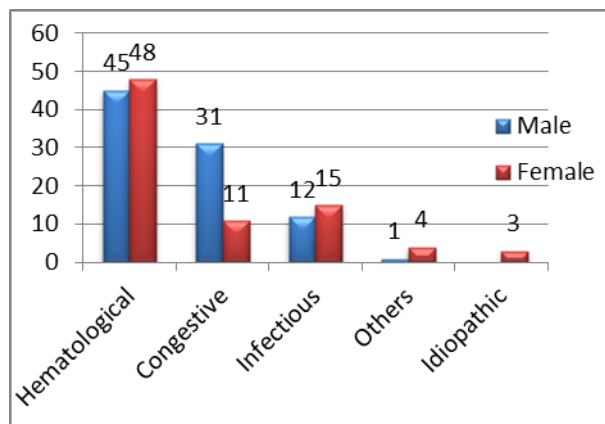
Out of 170 patients with splenomegaly Hackett's grade I splenomegaly was present in 13% cases, grade II was in 55% cases, grade III in 28% and grade IV in 4% cases. There was no case of grade V splenomegaly in our study. Figure 2.

**Figure-2 Clinical Grading in Patients of Splenomegaly**



Hematological causes constituted 93(54.5%) of cases, followed by Congestive causes constituting 42 (24.5%) of cases. Next in series were patients of Infectious causes accounting for 23(13.5%) of cases. Other causes included 7(4.%) cases & 5(3%) cases remain idiopathic. Figure:3.

**Figure:3 Etiological spectrum Of Patients With Splenomegaly**



Hematological malignancies were most common cause of splenomegaly in this study. Among 93(54.7%) of 170 cases of hematological etiology chronic myeloid leukemia constituted 43(25.29%) cases followed by 12(7%) cases of acute leukemia & 12 cases of lymphoma. In acute leukemia there were 9 cases of AML & 3 cases of ALL. In lymphoma 10 cases were of NHL & 2 cases of hodgkin lymphoma. Next in the series were of cases of nutritional anemia including 5(3%) cases of megaloblastic anemia & 3(1.76%) cases of iron deficiency anemia, Hemolytic anemia 9 (5.29%) cases. Chronic lymphoid leukemia constituted 5(3%) cases, myelodysplastic syndrome 2 cases & myelofibrosis

3(1.76%) cases. Essential thrombocytosis & Polycythemia Vera constituted 1 cases each.

Among 42 (24.7%) of 170 cases of congestive etiology 27 (15.88%) cases were due to alcoholic liver disease with portal hypertension, 7 (4.11%) cases were due to other causes of chronic liver disease with portal hypertension, 3(1.76%) cases were due to non cirrhotic portal fibrosis, 3 (1.76%) cases were due to right heart failure, 1 case was of budd chiari syndrome & 1 case due to chronic pancreatitis with portal vein thrombosis. Among 27 (15.8%) of 170 case of infectious etiology of splenomegaly 10 (5.88%) cases were of malaria infection, 6 (3.5%) cases were due to enteric fever, 3 (1.76%) cases were due to disseminated tuberculosis, 3 cases were due to HIV infection, 2 (1.17%) cases were due to subacute bacterial infective endocarditis, 2 were due to tropical splenomegaly & 1 case was due to leptospira infection. Among other causes of splenomegaly 3 cases were associated with SLE, 3 cases of rheumatoid arthritis 1 case of sarcoidosis. In 5 cases the cause of splenomegaly could not be found.

#### IV. DISCUSSION

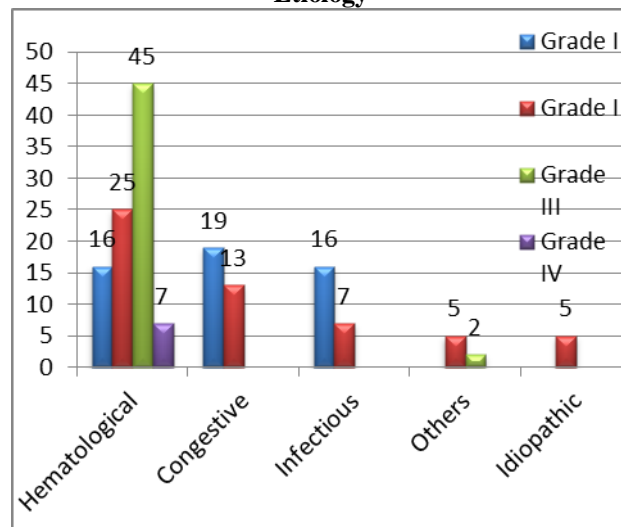
In this study, maximum cases were in age group of 36-45 years (24.11%). The male: female ratio was 1.3:1. In a study by Varsha S et al<sup>3</sup>, the male to female ratio was 1.2:1, that was comparable to our study. In the present study, generalised weakness & fatigue were the commonest clinical symptom seen in 77 patients followed by abdominal Discomfort (n=48). The clinical presentation seen in this study is due to higher number of cases of hematological diseases. Pallor was the most common clinical finding in our study in 57 cases followed by hepatomegaly (n=44). These findings were comparable to study by Shirish S et al<sup>4</sup>.

In our study the most common cause of splenomegaly was due to hematological diseases constituted 54.5% of cases which was comparable to study by O'Reilly et al (57%)<sup>5</sup> & Shirish S et al<sup>4</sup> (60%). Infectious causes were most common cause of splenomegaly in studies by Varsha S et al<sup>3</sup>, J Balaji et al<sup>6</sup> & Asif Nadeem et al<sup>7</sup> constituting 49% , 41% & 44.6% respectively. The most common hematological case of splenomegaly in our study was CML which was comparable to study by J Balaji et al<sup>6</sup>. In study by Varsha S et al<sup>3</sup> most common hematological cause was hemolytic anemia & in study by Shirish S et al<sup>4</sup> it was iron deficiency anemia. The most common congestive cause of splenomegaly in our study was alcoholic liver disease which was comparable to study by Varsha S et al<sup>3</sup>. In study by Shirish S et al<sup>4</sup> most common congestive cause was liver cirrhosis whereas in study by J Balaji et al<sup>6</sup> NCPF was the most common congestive cause of splenomegaly. Data from other studies shows that cirrhosis with portal hypertension is a common cause of moderate (4-8 cm) splenomegaly<sup>8</sup>. Among infectious cases of splenomegaly most common cases were of malaria infection followed by enteric fever that were comparable to all other studies. Some studies on dengue fever show splenomegaly in a wide range between 8.2% and 60.0%<sup>9,10</sup>. In one study of eighty five cases of AIDS, splenomegaly was found in 59 cases (69.4 %)<sup>11</sup>. Some cases in present study have multiple etiologies, such as alcoholic liver disease causing liver cirrhosis & portal hypertension & associated with hepatitis B or C infection. For

sake of statistics, these were grouped into congestive causes. A study by Konan et al<sup>12</sup> shows multifactorial etiology although this study was conducted on children.

Grade II splenomegaly was the commonest finding in present study which accounted for 55% of total cases and this was comparable to studies by Varsha S et al<sup>3</sup> & J Balaji et al<sup>6</sup> (44% & 31% respectively). The most common causes of grade I splenomegaly were congestive(11.17%) followed by hematological & infective(11.4% each). Most common cause of grade II splenomegaly was hematological disorders(14.7%) followed by congestive causes(7.6%), infectious causes(4.1%) & other causes(3%). Grade III splenomegaly cases(26.4%) were because of hematological diseases only (neoplastic). 16 of 93 hematological cases belongs to grade I (by Hacket's grading), while 25 were grade II, 45 cases were of grade III & only 7 cases were associated with grade IV. Next in the series were congestive causes in which 19 cases were of grade I & 13 of grade II etiology. In infectious causes 16 cases were of grade I etiology whereas 7 cases were of grade II etiology. Other causes including autoimmune disorders like SLE, sarcoidosis were associated with 5 cases of grade II & 2 cases of grade III splenomegaly.

Figure:4 Correlation between grades of splenomegaly and Etiology



#### V. CONCLUSION

The present study concludes that splenomegaly in a symptomatic person should be properly evaluated. In our study Hematological causes(54.7%) outnumbered the non-hematological cause(45.3%) of splenomegaly. Among hematological causes neoplastic causes (50%) were more common. The most frequent cause of splenomegaly was chronic myeloid leukemia(25.29%). Among non-hematologic causes portal hypertension was most common. This could be due to high prevalence of alcoholic liver disease(15.88%) in this area. These were followed by other hematological, congestive & infective causes. Some Indian studies (Varsha S et al<sup>3</sup> & J Balaji et al<sup>6</sup>) reported infectious causes to be most common cause of splenomegaly whereas in our study these were to the extent of 13%. In this comparative analysis of different studies the

variation in these findings could be due to regional differences & prevalence of various disease in particular area.

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