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HAEMATOLOGICAL PROFILE IN SPLENOMEGALY

KEYWORDS: Complete blood count, Peripheral blood film, Myeloperoxidase

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ABSTRACT The spleen is an important organ of the immune system, with lymphoid, reticuloendothelial and vascular compo nents. Disturbance of any of these may cause Splenomegaly. Pertinent haematological investigations will be carried out with the aim of finding etiology and effects of Splenomegaly on haematological parameters with reference to cell counts and Bone Marrow studies. 80 cases will be evaluated to determine the common causes of Splenomegaly. The CBC and PBF examination will be done on these patients and the findings will be correlated with Bone Marrow Aspiration and Bone Marrow Biopsy. Special stains like Prussian blue, Reticulin and MPO will be done wherever required. The results of the study will be compiled and analyzed statistically.

INTRODUCTION

Splenomegaly is a subject of considerable clinical concern as spleen is not normally palpable and a palpable spleen may be an indicator of a serious disorder.[1] Most of the chronic conditions like chronic malaria, myeloproliferative diseases, hemolytic anemias, Gaucher's disease and some of the lymphoid and myeloid neoplasms lead to massive Splenomegaly.[2] Palpable spleen in a symptomatic person is always significant. In spite of advances in haematology, immunology, radiology and ultrasonography, there remains a group of patients of enlarged spleen with a final diagnosis of "Splenomegaly of Indeterminate origin" or "Obscure Splenomegaly".[3] Where a definitive diagnosis cannot be reached even after every possible invasive and noninvasive investigations. Present study is a humble attempt to elucidate etiopathogenesis of Splenomegaly and its associated haematological manifestations

MATERIALS AND METHODS

Study performed on 80 patients with Splenomegaly (haematological parameters Hb, CBC count, platelet count, Red cell indices i.e. (MCV, MCH, MCHC, RDW) was recorded. Clinical history and examination done. PBF and Bone marrow Aspiration and Biopsy performed. Slides were stained with Leishman's stain. Special stains MPO, Sudan Black, perls used wherever required.

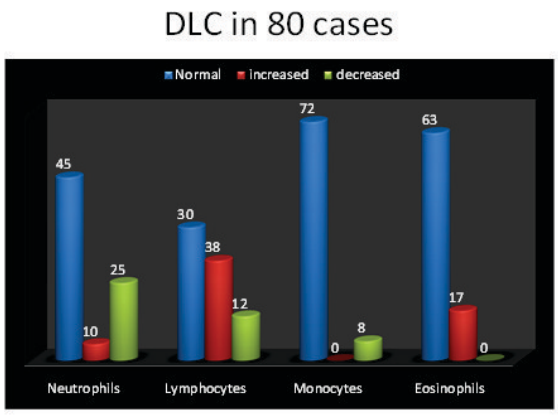
OBSERVATIONS AND RESULTS

The present study depicts that males (66%) were affected more than females (34%). The most common age group affected in males was 51-60 years and in females was 31- 40 years. The incidence of male: female ratio was 2:1.
(55%) presented with moderate Splenomegaly followed by mild Splenomegaly (30%) and (15%) cases presented with severe Splenomegaly.

(36%) presented with hepatomegaly associated with Splenomegaly, followed by lymphadenopathy (14%). The association of hepatosplenomegaly with lymphadenopathy was present in (6%) cases (90%) showed decreased hemoglobin concentration and only 8 cases (10%) of congestive Splenomegaly presented with the normal haemoglobin concentration. Amongst the 26 cases (32%), 23% cases were of iron deficiency anemia, 4% of megaloblastic anemia and 5% of dimorphic anemia.

Of the total 80 cases of splenomegaly, 38 cases (47%) cases presented with normal Total Leukocyte Count (TLC), 30 cases (38%) showed decreased TLC and 12 cases (15%) cases showed increased TLC. 12 cases (15%) of haematological neoplasia 2 cases (2%) of Rheumatoid arthritis presented with increased TLC. 11 cases (13%) of congestive causes, 8 cases (10%) of anemic cases presented with decreased TLC.

Chart 1 :



44 cases (56%) out of total 80 cases of Splenomegaly were associated with decreased platelet count, while 29 cases (36%) showed normal platelet count and the rest 7 cases (8%) presented with increased platelet count.

MCV, MCH, MCHC were found to be decreased respectively, in 58%, 67%, 44% cases of Splenomegaly.

RDW was found to be increased in 85% of the cases, of which anemia (32%) was most common association followed by congestive causes (18%) and neoplastic causes (13%).

61 cases (78%) of total 80 cases of enlarged spleen presented with normal Retic count, while 9 cases (10%) showed decreased Retic count and 10 cases (12%) were associated with increased Retic count which includes anemic patients on iron, bleeding in ITP, miscellaneous causes like Splenic cyst, infarct and multiple myeloma.

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(96%) were associated with decreased RBC count, of which anemia (32%) showed the most frequent association followed by congestive causes of splenic vein thrombosis, ALD (18%).

Out of total 80 cases of Splenomegaly, 24 patients presented with Hypersplenism.

Hypersplenism was associated with either Normocellular or Hypercellular marrow. 14 cases (18%) out of 24 cases (30%) of hypersplenism were associated with hypercellular marrow and 10 cases (12%) showed Normocellular marrow.

Table 2: Final diagnosis based on Haematological parameters in 80 Splenomegaly cases.

Final Diagnosis		No of cases	Percentage (%)
Anemia (n=26)	Iron deficiency anemia	19	23
	Megaloblastic anemia	3	4
	Dimorphic anemia	4	5
Neoplastic (n=12)	CML	6	8
	AML	2	2
	ALL	3	5
	Metastatic Lymphoma	1	1
Others (n=9)	ITP	3	5
	Thalassemia	1	1
	Multiple Myeloma	5	6
Congestive (n=16)	Liver Cirrhosis(ALD)	14	18
	Budd chiari syndrome	2	2
Infection (n=10)	Malaria	6	8
	Dengue	2	2
	HIV	2	2
Inflammatory (n=2) Miscellaneous(n=5)	Rheumatoid Arthritis	2	2
	SLE	2	2
	Splenic cyst	2	2
	Splenic infarct	1	1
Total		80	100

DISCUSSION

We have studied 80 cases of Splenomegaly, referred to Haematology section of pathology department. Complete medical history was taken and findings of detailed physical examination were noted for each patient. Pertinent haematological investigations were carried out with special reference to cell counts and bone marrow studies, with the aim of finding etiology and effects of splenomegaly on hematological parameters. Similar methodology has been adopted and aims have been attended in few studies concluded by Hussain I et al[4] in 2002, Ali et al[5] in 2004, Sundersan BJ et al[6] in 2005.

In our study, males (66%) were affected more than females (34%). The most common age group affected in males was 51-60 years and in females was 31-40 years. The incidence of male: female ratio was 2:1. Studies by. Hussain I et al[4] and Varsha et al[7] showed 1:1 and 1.2:1. The age difference from present study may be due to geographical distribution.

The present study showed that substantial number of association of hepatomegaly with lymphadenopathy was found in 6% cases. These findings were comparable to the study conducted by Timite Konan M et al[8],, and O'Reilly RA.[9] In the present study, 38 cases (47%) had normal total leukocyte count followed by 30 cases (38%) with decreased TLC which is seen in Hypersplenism, viral infections, malignancy under treatment, followed by 12 cases (15%) with increased TLC. 12 cases (15%) had increased TLC . Out of which 8 cases was of chronic myeloid leukemia followed by 2 cases of inflammatory and 2 cases of AML.

Table: 3 Comparison of frequency of etiological factors for Splenomegaly of present study with previous studies

Etiology	O' Reilly[9]	Hussain op J et al[4]	Ali N Et al[5]	Swaroop et al[10]	Varsha Et al[7]	Present study (%)
Haematological	35	12	66	45	13	58
Infective	16	05	28	43	49	15
Inflammatory	--	--	--	--	--	02
Congestive	36	71	--	9.4	23	25
Miscellaneous	04	--	06	1	13	07

Out of 24 cases (30%) of Hypersplenism, 22 cases (27.5%) were associated with moderate enlargement of spleen while, 2 cases (2.5%) presented with mild Splenomegaly. There was a significant association between Splenomegaly and Hypersplenism ($p < 0.05$). Sunderesan BJ et al[6] study is compatible with present study.

Total leukocyte count values were found to be significantly associated with hypersplenism ($p < 0.05$).

Hypersplenism was significantly with decreased platelet count ($p < 0.0001$)

CONCLUSION

Total 80 cases of clinically inquired Splenomegaly were evaluated clinically, Ultrasonographically with pertinent investigations and Haematological investigations with special emphasis on cell counts and bone marrow studies.

- Haematological causes (58%) outnumbered the non Haematological causes (42%) of Splenomegaly. The most frequent cause of Splenomegaly was Anemia (32%) followed by congestive causes (25%) and hematological Neoplastic conditions (15%).
- Hypersplenism was present in 30% cases. The Splenomegaly was of moderate degree in 55% of such cases.
- There was a significant correlation of Hypersplenism with degree of leucopenia and thrombocytopenia
- Splenomegaly in a symptomatic should always be investigated thoroughly as most of the common causes are treatable
- Some patients with isolated Splenomegaly never develop signs of serious disease, and a "wait and watch" strategy should be advocated if there are no concerning features.
- Degree of Splenomegaly was significantly associated with degree of Hypersplenism
- Haematological parameters were informative, fairly fruitful and provided insight in to its antecedent clinio - haematological aspects.

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