ORIGINAL RESEARCH PAPER

Paediatrics

STUDY OF SPLENOMEGALY IN CHILDREN.

KEY WORDS:

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ABSTRACT

Splenomegaly is common clinical finding in pediatric practice. Splenic enlargement occurs when the spleen is increased by cells or tissue components or by vascular engorgement. Various etiologies can cause splenomegaly. The spleen is rarely the primary site of a disease. Splenomegaly is classified according to the length palpable below the costal margin as mild: <3 cm, moderate: 4-7 cm & massive: >7 cm. Severe/massive splenomegaly doesn't commonly occur in first 5 years of age, occurs after 5 years of age. So, clinical examination of every child is important to diagnose splenomegaly at early stages. Only in the age group of 1 to 5 years females predominated as compared to males. In present study there is obvious male predominance as male: female ratio is 1.8:1. This difference could be due to more priority to male child to seeking medical care with such chronic illness.Present study also suggested that severe/massive splenomegaly doesn't commonly occur in first 5 years of age, occurs after 5 years of age. So, **clinical examination** of every child is important to diagnose splenomegaly at early stages.

INTRODUCTION:

Splenomegaly is common clinical finding in pediatric practice. It is commonly enlarged due to various systemic involvements. In most individuals spleen must be 2-3 times enlarged before it is palpable[1].

A soft thin spleen is normally palpable in up to15% of neonates, in10% of the healthy children and in up to 5 % adolescent [1]. In children less than 1year the lower pole of the spleen may just palpable. It has a notched anterior border and it is surrounded by peritoneum. The arterial blood supply is from the splenic artery[2,3,4]. Splenic enlargement occurs when the spleen is increased by cells or tissue components or by vascular engorgement. This augments its filtering function and even normal blood cells experience a delayed transit and temporary sequestration. The sequestration of granulocytes andplatelets causes neutropenia and thrombocytopenia, but these cells appear to tolerate their prolonged stay in the spleen. The trapped red cells on the other hand are usually destroyed resulting in haemolytic anemia[5,6,7].

Enlargement of the spleen may be associated with hypersplenism, which occurs with an increase of filtration and macrophage surveillance in the red pulp and antibody synthesis in the white pulp.In children splenomegaly usually results from hyperplasia of the mononuclear-phagocyte system (MPS) which can be categorized as excessive antigenic stimulation disorders, excessive destruction of abnormal blood cells and disorders of immune regulation[2,8].

The spleen is rarely the primary site of a disease. Splenomegaly is classified according to the length palpable below the costal margin as mild: <3 cm, moderate: 4-7 cm & massive: >7 cm [2].

AIMS AND OBJECTIVES:

The present study aimed to find out the various etiology, associated clinical features and the outcome in these children.

MATERIALS AND METHODS:

Study design:

Retrospective observational study.

INCLUSION CRITERIA:

All the children bellow 12 years of age who were admitted in pediatric ward of a tertiary care center with persistently enlarged spleen during the study period of 2 years (June 2017-May2019) were included.

EXCLUSION CRITERIA:

- Newborns were excluded from the study.
- Thalessemia children both old & newly diagnosed were excluded.
- Enlarged spleen which regressed from the initial size during the course in hospital were excluded.

ETIOLOGY:

A) HAEMOLYTIC CONDITIONS-

	PARAMETER	NUMBER	PERCENTAGE
1.	AntiE antibody haemolyticanaemia	1	1.14%
2.	Warm auto antibody haemolyticanaemia	1	1.14%
3.	Sickle cell disease	12	13.79%
4.	Sickle beta thalassemia	3	3.44%
5.	Congenital spherocytosis	1	1.14%
6.	Enzymopathy	2	2.29%
7.	Undiagnosed	6	6.89%

B) PORTAL HYPERTENSION-

	PARAMETER	NUMBER	PERCENTAGE
	EXTRAHEPATIC		**9.18%**
1.	Portal vein thrombosis	4	4.59%
2.	Undiagnosed	4	4.59%
	INTRAHEPATIC		**32.19%**
1.	Wilsons disease	9	10.34%
2.	Autoimmune hepatitis	2	2.29%
3.	Metabolic liver disease	3	3.44%
4.	Chronic hepatitis B infection	1	1.14%
5.	Biliaryatresia	2	2.29%
6.	Congenital hepatic fibrosis	2	2.29%
7.	Undiagnosed CLD4	9	10.34%

C) MALIGNANT CONDITION

	PARAMETER	NUMBER	PERCENTAGE
1.	ALL	8	9.19%
2.	Other condition	1	1.14%

D) STORAGE CONDITION

	PARAMETER	NUMBER	PERCENTAGE
1.	Gaucher's disease	1	1.14%
2.	MPS	1	1.14%

E) CHRONIC INFECTION

	PARAMETER	NUMBER	PERCENTAGE
1.	CMV	4	4.59%
2.	Rubella	1	1.14%
3.	Toxoplasmosis	1	1.14%
4.	TB	2	2.29%

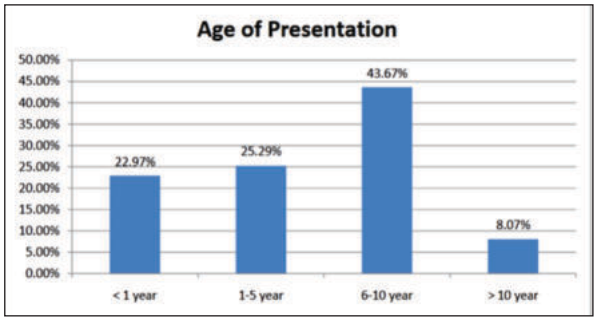
F) MISCELLANEOUS

	PARAMETER	NUMBER	PERCENTAGE
1.	Caroli's disease	1	1.14%
2.	Neonatal hepatitis syndrome	4	4.59%
3.	ChediacHegashi Syndrome1	1	1.14%

RESULTS:

AGE OF PRESENTATION

AGE	MALE	FEMALE	TOTAL (%)
< 1 years	14	6	**22.97**
1-5 years	9	13	**25.29**
6-10 years	27	11	**43.67**
>10 years	6	1	**8.07**
TOTAL	**56**	**31**	**100**



Maximum number of children were in the age group of 6-10 years (43.67%). Only 8.07% of children were > 10 years of age.

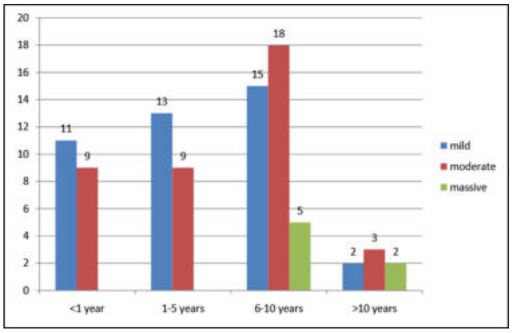
Male: Female ratio was 1.8: 1 with male children predominates in all age group except 1-5 years in which females were more.

Age wise splenomegaly:

	Mild	Moderate	Severe/Massive
< 1year	11	9	Nil
1-5 years	13	9	Nil
6-10 years	15	18	5
>10years	2	3	2
Total	41 (47.12%)	39 (44.81%)	7 (8.07%)

Vaccination: 64.36% children were fully vaccinated while 29.88% were partially immunised for their age. Only 5.74% of children were unimmunised.

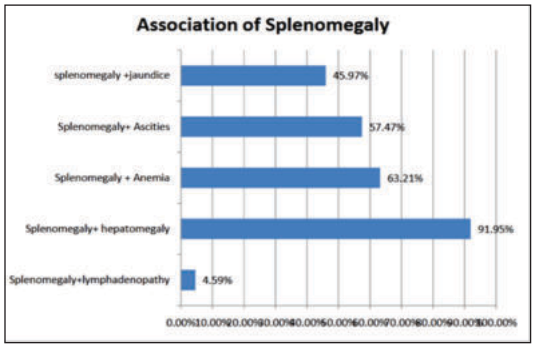
Development : Moderate to severe global developmental delay was observed in 8 patients out of all (9.19%).



Massive splenomegaly was seen in children above 5 years of age only.

ASSOCIATED ABNORMAL FINDINGS:

Condition	No. of patients	Percentage
Splenomegaly	-	-
Splenomegaly + Generalisedlymphadenopathy	4	4.59%
Splenomegaly + Hepatomegaly	80	91.95%
Splenomegaly + Anemia	55	63.21%
Splenomegaly + Ascitis	50	57.47%
Splenomegaly + Jaundice	40	45.97%



DISCUSSION

The present included 87 patients from age group post neonatal period to 12 years. Maximum number of children were in the age group of 6-10 years (43.67%) where as least number of children were (8.07%) in > 10 years of age. Present study also suggested that severe/massive splenomegaly doesn't commonly occur in first 5 years of age, occurs after 5 years of age. So, clinical examination of every child is important to diagnose splenomegaly at early stages. Every child included in study had associated abnormal findings along with splenomegaly, most common being hepatomegaly in 91.95%, followed by anemia in 63.21%. Other co existing abnormal findings being ascitis (57.47%), jaundice (45.97%), generalized lymphadenopathy (4.59%).

Various other etiological factors causing splenomegaly with their respective percentages are as -

1) Haemolytic conditions in 29.9% of cases amongst which sickle cell disease and Sickle-beta thalassemia dominated with 17.23%.
2) Portal hypertension in 41.38, Intrahepatic group predominated with 32.19% over extrahepatic group (9.18%). Among intrahepatic causes, Wilson's disease was the most common cause. Undiagnosed chronic liver disease was equally seen in 10.34% cases.
3) Acute lymphoblastic leukaemia was detected in 9.19% of cases.
4) Chronic infection(9.2%) and storage disorder (2.29%) were other causes of splenomegaly.

CONCLUSION:

In the present study, Only in the age group of 1 to 5 years females predominated as compared to males. In present study there is obvious male predominance as male: female ratio is 1.8:1. This difference could be due to more priority to male child to seeking medical care with such chronic illness.Present study also suggested that severe/massive splenomegaly doesn't commonly occur in first 5 years of age, occurs after 5 years of age. So, clinical examination of every child is important to diagnose splenomegaly at early stages.

Limitations: New borns and >12years of age were not included in the study. The study didn't include long term follow up.

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