ORIGINAL RESEARCH

Assessment of etiological factors and clinical outcome of splenomegaly among the children admitted under pediatric department

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ABSTRACT

Background: To assess the etiology and clinical features of splenomegaly among children.

Materials & methods: A total of 40 children from 6 months to 15years, with varying grades of Splenomegaly of different etiologies, admitted to pediatric ward. Detailed History was taken. Physical examination and necessary investigations were done. Enlargement of the spleen is considered with measuring 1-3cms as mild, between 4-7cms as moderate and above 7cms as massive. Statistical analysis was done by analyzing data by SPSS software.

Results: Commonest etiology among the cases in the present study are due to infectious etiology which are 47.5% followed by hematologic disorders 35%. Incidence of moderate Splenomegaly was observed commonly in infectious etiology that is 14 cases out of 26 (53.8%) and Massive Splenomegaly was observed in hematologic 5 cases out of 11 (45.4%).

Conclusion: Occurrence of Splenomegaly is commonly due to various infections.

Keywords: Splenomegaly, infections, children.

INTRODUCTION

Splenomegaly is defined as enlargement of the spleen measured by weight or size. The spleen plays a significant role in hematopoiesis and immunosurveillance. The major functions of the spleen include clearance of senescent and abnormal erythrocytes and their remnants, opsonized platelets and white blood cells and removal of microorganisms and antigens. The spleen also serves as a secondary lymphoid organ and is the site for maturation and storage of T and B lymphocytes, playing an important role in the synthesis of immunoglobulin G (IgG) by mature B-lymphocytes upon interaction with the T-lymphocytes. The spleen also synthesizes the immune system peptides properdin and tuftsin. Approximately one-third of circulating platelets are stored in the spleen. The normal position of the spleen is within the peritoneal cavity in the left upper quadrant adjacent to ribs 9 through 12. The normal-sized spleen abuts the stomach, colon, and left kidney.[1,2]The mechanism underlying splenic enlargement varies based on the etiology. In the case of acute infectious illness, the spleen performs increased work in clearing antigens and producing antibodies and increases the number of reticuloendothelial cells contained within the spleen. These increased immune

functions may result in splenic hyperplasia. In the case of liver disease and congestion, underlying illness causes increased venous pressure causing congestive splenomegaly. Extramedullary hematopoiesis exhibited in myeloproliferative disorders can lead to splenic enlargement (infiltrative splenomegaly).[3,4]

The close anatomical connection of the portal vein system with the splenic vein results in secondary splenic enlargement in case of blockade of the venous blood stream. Hypertension of the portal vein above normal (1–5 mm Hg) may occur due to increased intrahepatic vascular resistance.[5] With a further increase in portal pressure above 10 mm Hg additional complications arise from the formation of portosystemic collaterals that can promote esophageal and gastric varices with a high risk of bleeding and mortality. As there are multiple potential causes of splenomegaly, a careful and thorough evaluation is required and it may pose a challenge to find the underlying cause. [6,7] Situations of acute blood loss, therapeutic reduction of the hematocrit in relation to plasma volume (hemodilution), and infections all result in physiological transient enlargement of the spleen which is completely reversible after disappearance of the causing trigger. [8] Hence, this study was conducted to assess the etiology and clinical features of splenomegaly among children.

MATERIALS & METHODS

A total of 40 children from 6 months to 15years, with varying grades of Splenomegaly of different etiologies, admitted to pediatric ward. Detailed History was taken. Physical examination and necessary investigations were done. Enlargement of the spleen is considered with measuring 1-3cms as mild, between 4-7cms as moderate and above 7cms as massive. Statistical analysis was done by analyzing data by SPSS software.

RESULTS

A total of 40 subjects were enrolled. Hepatomegaly was the most common presenting sign accounting for 60% followed by anemia in 38% and Lymphadenopathy in 22% cases.

Table 1: signs associated with splenomegaly

Common signs	Percentage (%)
Hepatomegaly	60
Anemia	38
Lymphadenopathy	22

Moderate splenomegaly was seen in 65% followed by massive in 27.5% and 7.5% in mild grading.

Table 2: Grades of splenomegaly

Grades of splenomegaly	Frequency	Percentage
Mild (1-3cms)	3	7.5
Moderate (4-7cms)	26	65
Massive (>7cms)	11	27.5
Total	40	100

Commonest etiology among the cases in the present study are due to infectious etiology which are 47.5% followed by hematologic disorders 35%. Incidence of moderate Splenomegaly was observed commonly in infectious etiology that is 14 cases out of 26 (53.8%) and Massive Splenomegaly was observed in hematologic 5 cases out of 11 (45.4%).

Table 3: Incidence of splenomegaly against etiology

Grades of splenomegaly	Infectious	Hematologic	Congestive	Malignancy	Miscellaneous	Total
Mild	2	1	0	0	0	3
Moderate	14	8	2	1	1	26
Massive	3	5	1	0	2	11

Total	19	14	3	1	3	40

DISCUSSION

Splenomegaly is not regarded as a disease of its own, but rather as a potential symptom associated with different disorders. In healthy individuals a spleen is usually not palpable in most cases. A patient exhibiting splenomegaly may therefore present with a number of clinical signs and laboratory or imaging findings that are commonly associated with distinct diseases ranging from self-limiting benign to infectious disorders or even malignancies. Thus, the finding of an enlarged spleen in a patient should be investigated properly to ascertain the etiology which may represent a diagnostic challenge in some cases. [9]Hence, this study was conducted to assess the etiology and clinical features of splenomegaly among children.

In the present study, a total of 40 subjects were enrolled. Hepatomegaly was the most common presenting sign accounting for 60% followed by anemia in 38% and Lymphadenopathy in 22% cases.Moderate splenomegaly was seen in 65% followed by massive in 27.5% and 7.5% in mild grading. A study byRajanna P et al studied 50 children from 6 months to 18years, with varying grades of Splenomegaly of different etiologies, admitted to pediatric ward of RVM Institute of Medical Sciences, Siddipet. Detailed History was collected by administering semi-structured questionnaire on each case, physical examination and necessary investigations were done wherever required. Male preponderance was seen. Maximum incidence of Splenomegaly was seen between 6 months to 6 years age group (56%).Majority of the cases had moderate Splenomegaly (46.15%). Fever was the most common presenting feature associated with Splenomegaly. Infections (44%) were the most common Cause of Splenomegaly followed by hematologic diseases (36%). Occurrence of Splenomegaly is commonly due to various infections. Males are predominantly having splenomegaly; majority of cases had moderate Splenomegaly. [10]

In the present study, commonest etiology among the cases in the present study are due to infectious etiology which are 47.5% followed by hematologic disorders 35%. Incidence of moderate Splenomegaly was observed commonly in infectious etiology that is 14 cases out of 26 (53.8%) and Massive Splenomegaly was observed in hematologic 5 cases out of 11 (45.4%). Another study by Timite- Konan M et al studied discovery of an enlarged spleen in a child requires steps to identify the etiology. One hundred and seventy-eight patients seen over a four-year period (1985-1988) at the Cocody Teaching Hospital were reviewed. The incidence of splenic enlargement among pediatric inpatients was 1.6%. Males (n = 106) were more often affected than females (n = 72). Slightly over half the children (54.49%) were 0 to 5 years of age. The main clinical presenting features were fever (90%), anemia (72%), a decline in general health (36.50%), enlargement of the liver (33.50%), jaundice (26.50%), and enlarged lymph nodes (7%). Malignancies (leukemia, lymphoma) were relatively infrequent. More than one etiology was found in 13 cases. The distribution of etiologies by age group was determined and a strategy for investigating children with splenic enlargement in tropical countries was developed. [11]In young adolescence, acute infection with EBV (mononucleosis, “student kissing disease”) is a very common cause of splenomegaly which usually is associated with a sore throat, fever and lymphadenopathy. Rare cases with resulting splenic rupture after a minimal trauma have been observed. [12,13]Splenomegaly is often an impressive feature of malarial infection. While this parasitic infection is rarely observed in Western world countries, it represents a very common cause of splenomegaly worldwide. Repetitive bouts of malaria induce an abnormal immune response resulting in massive hyperreactive malarial splenomegaly. [14] In addition, a large biomass of red cells infected with viable young and mature parasites accumulates in the spleen in asymptomatic persons chronically infected with malaria. [15]

CONCLUSION

Occurrence of Splenomegaly is commonly due to various infections.

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