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CLINICAL AND ETIOLOGICAL PROFILE OF PANCYTOPENIA IN INDIAN CHIDREN

Paediatrics

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ABSTRACT

Background: Pancytopenia is a common problem in Pediatric age group. The etiology of pancytopenia varies widely in children, ranging from transient viral suppression of marrow to infiltration by fatal malignancy. Knowing the exact etiology is important for specific treatment and prognostication.

Objectives: To study the clinical parameters and etiological profile of pancytopenia in hospitalized children.

Material and methods: A cross sectional study was conducted at MGM, Medical College, Indore for 6 months from June 2018 to December 2018. Patients between age group 1 to 14 years presenting with pancytopenia were included in this study. Clinical features and etiological profile of patients with pancytopenia (Hb<10g/dl, TLC <4000 x 109/L, Platelet < 1x 109) was analysed.

Results: In our study, aplastic anemia(26.4%)and leukemia(17.6%) were the most common causes of pancytopenia. Pallor was the most common clinical feature seen in 61.7% patients followed by fever, petechial hemorrhages and hepatosplenomegaly.

Conclusion: Pancytopenia has a diverse etiology. In our study, aplastic anemia and leukemia were the most common causes of pancytopenia. Many causes of pancytopenia like infections and megaloblastic anemia are easily treatable. There is a need to be aware of the different etiologies and various investigative modalities so that appropriate treatment measures can be implemented at the earliest.

KEYWORDS

INTRODUCTION

Pancytopenia is reduction in all three cellular elements of blood i.e. red cells, white cells and platelets [1]. Pancytopenia is a common occurrence in pediatric age group with an extensive differential diagnosis.[2,3,4] The etiology of pancytopenia varies widely from transient suppression of marrow due to infections to marrow infiltration by life threatening malignancies. Determination of the specific etiology is of utmost importance for appropriate management. Pancytopenia itself is not a disease but may result from a number of disease processes affecting the bone marrow primarily or secondarily[5]. It can occur due to reduction in blood cell production, infiltration of marrow by abnormal cells sequestration of cells in reticuloendothelial system and antibody mediated destruction of cells [6,7,8].

Bone marrow plays a vital role in knowing the etiology of pancytopenia[9]. Understanding the pathology not only helps in timely management of life threatening malignancies but also in management of easily treatable conditions like megaloblastic anemia and infections.

METHODOLOGY:

This was a cross sectional study carried out for 6 months between June 2018 to December 2018 at MGM, Medical College, Indore(MP). A total of 34 patients within the age group of 1 to 14 years presenting with pancytopenia were included in this study.

The study included 34 children within the age group of 1 to 14 years who presented with pancytopenia on peripheral blood smear. Pancytopenia was defined as Hb< 10g/dl, TWBC < 4 x 10^9/ L and Platelet count <150 x 10^9/ L.

Detailed history of each patient was recorded on a proforma including age, duration of onset of anemia, dietary intake, h/o any drug intake , worm infestation, loss of blood from any site, number of blood transfusions in the past, h/o fever, loose motions, joint involvement, rashes, family history of blood transfusion etc.

Complete physical examination was recoded with details of liver and spleen size, lymphadenopathy, pallor, icterus, mucosal bleeding, petechiae and purpura.

On admission, complete blood count was done with peripheral smear and reticulocyte count. Based on history and clinical suspicion other investigations were done like blood culture, bone marrow aspiration, radiological examination, B 12 levels and serological tests. Bone marrow biopsy was done in cases where bone marrow aspiration was inconclusive.

RESULTS

Among the 34 cases studied, age of patients ranged from 1 to 14 years. 55.8% were male and 44% were female. In our study, aplastic anemia(26.4%)and leukemia(17.6%) were the most common causes of pancytopenia. Megaloblastic anemia, sickle cell anemia with hypersplenism and infections like enteric fever and malaria were other common causes of pancytopenia. Pallor was the most common clinical feature seen in 61.7% patients followed by fever, petechial hemorrhages and hepatosplenomegaly.

Table 1 Distribution of patients according to age and gender

Age	Male(n=19)	Female(n=15)	Total (n=34)
1-5 years	4	3	7
6 years- 10 years	6	7	13
11 years- 14 years	9	5	14
Total	19	15	34

Table 2 Etiological pattern of pancytopenia

Etiology	No. of cases	Percentage
Aplastic anemia	9	26.4
Leukemia	6	17.6
Megaloblastic anemia	4	11.7
Hemolytic anemia with hypersplenism	4	11.7
Enteric fever	4	11.7
Malaria	3	8.82
Gaucher's disease	1	2.9
Transient viral suppression	2	5.8
Myelodysplastic syndrome	1	2.9

TABLE 3 Clinical features of pancytopenia at presentation

Clinical feature	No.of cases	Percentage
Pallor	21	61.7
Fever	17	50
Petechial hemorrhages	7	20.5
Hepatosplenomegaly	7	20.5
Epistaxis	3	8.8
Gum hypertrophy	2	5.8

DISCUSSION

Pancytopenia is a striking feature of many serious and life threatening illnesses ranging from megaloblastic anemia to fatal bone marrow aplasias and leukemias.

Pancytopenia must be suspected in any patient presenting with pallor,

fever and bleeding. In our study pallor was the most common clinical feature in pancytopenic patients. In our study, aplastic anemia and leukemia were the most common causes of pancytopenia. Studies done earlier have reported varied etiology of pancytopenia in children.Bhatnagar et al.[10] retrospectively analysed 109 pediatric patients with pancytopenia and found megaloblastic anemia as the most common etiological factor. Gupta et al.[11]reviewed 105 children and found aplastic anemia as the most common cause of pancytopenia.

Pancytopenia is also common in infections like enteric fever and malaria as concluded from our study. In our study 1 patient was diagnosed as Gaucher's disease on Bone marrow Biopsy. Another patient with pancytopenia was diagnosed as MDS on the basis of Bone marrow biopsy and cytogenetics. These rare diseases must be kept in mind when dealing with pancytopenia in pediatric age group.

Our study has been done on a small sample size over a short time period so more studies are needed to find out other etiological factors that commonly lead to pancytopenia.

CONCLUSION

Primary hematological investigations with bone marrow aspiration is required in cytopenic patients to diagnose and understand the disease process and in planning further investigations and management. Aplastic anemia and leukemia are the most common etiological factors leading to pancytopenia in our study. There is a need to be aware of the different etiologies and various investigative modalities so that appropriate treatment measures can be implemented at the earliest.

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