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SPECTRUM OF PANCYTOPENIA: STUDY OF 13 CASES OF PANCYTOPENIA

General Medicine

Dr. Hardip Makavana Third Year Resident, Department Of General Medicine, Smt.nhl Municipal Medical College, Ahmedabad.

Dr. P N Palat Professor; Department Of General Medicine, Smt.nhl Municipal Medical College, Ahmedabad.

Dr. Poorva Kalsariya Senior Resident, Department Of Pathology, B. J. Medical College, Ahmedabad.

KEYWORDS

Pancytopenia, Bone marrow biopsy, Megaloblastic anemia.

INTRODUCTION

Pancytopenia is a hematological condition characterized by the simultaneous decrease of all three blood cell lines: erythrocytes, leukocytes, and thrombocytes [1]. It is a fairly common hematological condition encountered in routine clinical practice. Clinical features of pancytopenia usually result from bone marrow (BM) failure such as pallor, generalized weakness, dyspnea, bleeding manifestations, prolonged fever, and increased tendency to infections[2].

The etiology of pancytopenia can be diverse, ranging from bone marrow aplasia, malignancies, nutritional deficiencies, and chronic infections[3].Pancytopenia is a clinical manifestation of several underlying disorders including non-malignant and malignant conditions. Various mechanisms of the development of pancytopenia have been proposed. Major factors include reduction in hematopoietic cell production as in aplastic anemia, infiltration of BM by abnormal cells as in hematological malignancies, ineffective hematopoiesis with cell destruction as in megaloblastic anemia, antibody-mediated destruction of cells as in autoimmune disorders, and splenic sequestration of cells as in hypersplenism[4].

The cause and severity of the underlying disorder guide the treatment and prognosis of patients with pancytopenia[5]. Early diagnosis and specific treatment cure the majority of cases of pancytopenia. In other cases, early diagnosis and timely initiation of supportive treatment reduce morbidity and mortality, thereby improving the quality of life[6].

Aim: To analyze the clinical presentations, laboratory findings and bone marrow biopsy results of 13 patients diagnosed with pancytopenia.

MATERIALAND MATHODS:

This retrospective study includes 13 cases diagnosed with pancytopenia who were admitted to SVP Hospital. After obtaining a detailed clinical history and physical examination, all participants were subjected to relevant investigations including bone marrow examination. Previously diagnosed cases of pancytopenia who were under treatment (e.g., drugs, radiation) were excluded from the study.

RESULT:

A total 13 cases of pancytopenia were included in the present study. The following result were recorded and analysed.

Table 1: Age, Gender, CBC and Bone marrow biopsy finding of 13 pancytopenia cases

Case No.	Age (years)	Gender	Hb (g/dl)	WBC (kU/L)	Hct (%)	Platelet Count (kU/L)	LDH (U/L)	Bone Marrow Biopsy Findings
1	78	Male	6.1	1.43	18.2	45	153	Megaloblastic anemia
2	29	Female	4.8	2.27	15.2	32	300	Megaloblastic anemia
3	65	Male	6.9	1.68	22.4	40	551	Chronic granulomatous inflammation(TB)
4	36	Female	4.6	3.1	15.2	21	260	Aplastic anemia
5	73	Male	7.6	3.3	24	18	232	Aplastic anemia
6	50	Male	5.1	2.49	14.5	60	278	Megaloblastic anemia
7	58	Male	6.3	3.89	18.4	68	111	Myelodysplastic syndrome
8	70	Female	7.8	3.6	23.2	25	178	Megaloblastic anemia
9	60	Male	6.1	3.3	18.4	41	1332	Myelodysplastic syndrome
10	56	Male	5.7	4.58	15.1	18	632	Myelodysplastic syndrome
11	36	Female	4.7	1.05	15	11	1487	Non hodgkin's lymphoma involving the marrow
12	61	Male	7.3	0.97	20.8	140	213	Acute promyelocytic leukemia
13	73	Female	7.0	2.0	22.3	60	550	Chronic lymphoproliferative disease

Table 2: Analysis of clinical features

Clinical feature	No. of cases (%)
Generalised weakness	9 (69.2%)
Decreased appetite	6 (46.1%)
Fever	5 (38.5%)
Breathlessness	3 (23.1%)
Cough	3 (23.1%)
Gidddiness	2 (15.4%)
Oral ulcer	2 (15.4%)
Malena	2 (15.4%)
Sternal tenderness	1 (7.8%)
Abdominal pain	2 (15.4%)
Spleenomegaly	4 (30.8%)
Hepatomegaly	3 (23.1%)

Table 3: Etiological distribution of cases with pancytopenia according to gender

Etiology	No. of male (%)	No. of female (%)	Total (%)
Megaloblastic anemia	2 (15.4%)	2 (15.4%)	4 (30.8%)
Myelodysplastic syndrome	3 (23.1%)	-	3 (23.1%)
Aplastic anemia	1 (7.8%)	1 (7.8%)	2 (15.4%)
Chronic granulomatous inflammation(TB)	1 (7.8%)	-	1 (7.8%)

Non hodgkin's lymphoma involving the marrow	-	1 (7.8%)	1 (7.8%)
Acute promyelocytic leukemia	1 (7.8%)		1 (7.8%)
Chronic lymphoproliferative disease	-	1 (7.8%)	1 (7.8%)

LDH levels were elevated in patients with myelodysplastic syndrome and other marrow pathologies, suggesting increased cell turnover and destruction.

DISCUSSION:

A total of 13 cases of pancytopenia were studied. Age, gender-wise incidence, clinical features, CBC, bone marrow biopsy and various causes of pancytopenia were studied in all cases, and observations were compared with other studies.

In present study, The cases were ranged from 29 to 78 years with a mean age of 57.3 years and M:Fratio was 1.6:1. Our results were similar to those reported by Patel G R, Prajapati G R[7] and Gayathri BN et al.[8] where the mean age of patients were 40.3and 41 years, the male-to-female ratio was 1.26 and 1.2:1respectively.

Table 4: Comparison of clinical features with other studies

Clinical feature	Present study cases (%)	Patel G R[7]	Gayathri BN[8]
Generalised weakness	69.2	68	100
Decreased appetite	46.1	-	-
Fever	38.5	30	38.5
Breathlessness	23.1	-	43.26
Cough	23.1	-	-
Gidddiness	15.4	-	-
Oral ulcer	15.4	2.6	-
Malena	15.4	-	-
Sternal tenderness	7.8	10.8	-
Abdominal pain	15.4	5.1	-
Spleenomegaly	30.8	22	35.57
Hepatomegaly	23.1	12.6	26.92

Table 5: Comparison of the causes of pancytopenia with other studies

Cause of pancytopenia	In present study Cases (%)	Patel G R[7] Cases (%)	Gajbhiye S S[9] Cases (%)	Khunger JM[10] Cases (%)
Megaloblastic anemia	30.8	15.4	22	72
Myelodysplastic syndrome	23.1	5.3	6	2
Aplastic anemia	15.4	11	36	14
Chronic granulomatous inflammation(TB)	7.8	5.1	-	1
Non hodgkin's lymphoma involving the marrow	7.8	4.4	-	1
Acute promyelocytic leukemia	7.8	17.9	8	5
Chronic lymphoproliferative disease	7.8	1.3	-	-

CONCLUSIONS:

Out of various etiologies, megaloblastic anemia and aplastic anemia are the most common etiologies. To determine etiologies, thorough clinical and hematological evaluation becomes essential, and bone marrow aspiration and biopsy become an important part of the investigation. By diagnosing pancytopenia and its etiology from the clinical presentations and investigation, management can be initiated early and the reversible causes can be treated effectively further reducing morbidity and mortality.

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