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Research Article

Clinical and hematological audit of patients presenting with Pancytopenia at tertiary care hospital

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ABSTRACT:

Objective: Study the clinical and hematological profile of patients presenting with Pancytopenia tertiary care hospital.

Material and methods: This cross sectional study was conducted at Department of Pathology, Quaid-e-Azam Medical College, Bahawalpur from January 2018 to June 2018 over the period of 6 months. Total 56 patients with pancytopenia having age >18 years either male or female from the Department of Medicine Bahawal Victoria Hospital, Bahawalpur were selected. Clinical and hematological profile of the selected patients was studied in this study.

Results: Total 56 patients with pancytopenia were studied in present study. Mean age of the patients was 34.9±4.3 years. Out of the 56 patients, 33 (59%) were males and 23 (41%) were females. The major presentation of the patients with pancytopenia was megaloblastic anemia, which comprised of 24 (42.9%) of the cases. Among the common clinical symptoms, the most common one was pallor (73.2%)

Conclusion: Results of present study was showed that male patients were more victim of pancytopenia as compared to female patients. Megaloblastic anemia was the main cause of pancytopenia. Among the common clinical symptoms, the most common one was pallor.

Keywords: pancytopenia, pallor, megaloblastic anemia, aplastic anemia

INTRODUCTION

Pancytopenia is a quite common hematological problem encountered in medical practice.[1-2] It refers to decrease in cell count in all three lineages in blood i.e., anemia (hemoglobin (Hb) <13 gm%), leukopenia (White blood cell (WBC) count <4000/cc) and thrombocytopenia (platelet count <1.5 lakh/cc).[3-4] Hematopoiesis (blood cell production) in the healthy adult takes place in the bone marrow, from which mature blood cells migrate into the circulation, spleen and other sites.[5] The bone marrow is a dynamic organ and a hematopoietic reservoir that responds to ongoing needs for blood cell production. A balance between blood cell production, distribution in other organs, and ongoing cellular destruction (e.g., white blood cells fighting infections, platelet consumption in blood clots, cellular senescence) determines the levels of circulating blood cells.[6-8]

The likely causes of pancytopenia are influenced by geography, socioeconomic conditions, and

endemic illnesses. As examples, the likelihood of infectious (e.g.,malaria, tuberculosis, leishmaniasis) or nutritional causes (e.g., folate deficiency) of pancytopenia may be increased in some resource-constrained settings.[9-10] The vast majority of pancytopenia in adults is caused by acquired disorders.[11] Rarely, a previously unrecognized inborn errors of metabolism may account for cytopenias that are first detected in adulthood.[12-13] This study was undertaken to know the different disorders resulting in pancytopenia in this part of the country, observe their clinical presentation and correlate the peripheral blood smear with bone marrow finding and to institute therapy in some cases and see their response.

Operation definition:

Pancytopeniais defined as Hb<10g/dl, WBC count of 4000 cu/mm and platelets <1 lakh/cu.mm.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Pathology, Quaid-e-Azam Medical College, Bahawalpur from January 2018 to June 2018 over the period of 6 months. An approval was taken from institutional review committee and written informed consent was taken from each patient.

Total 56 patients with pancytopenia having age >18 years either male or female from the Department of Medicine Bahawal Victoria Hospital, Bahawalpur were selected. Patients less than 18 years of age and those who are receiving or have received platelet transfusion prior to the admission have been excluded from the study. Those patients of chemotherapy for neoplasms have also been excluded from the study.

All the patients were subjected to thorough clinical and physical examination. General demographic details such as age, sex, height, weight etc were noted. Palpitations, fever, fatigue, shortness of breath and other symptoms of pancytopenia were also carefully noted. Examinations for the conditions of internal organs such as X-rays of chest, ultrasound of the abdomen were performed on all the patients.

Blood samples were collected in EDTA tubes for complete blood analysis and in plain tubes for biochemical tests and peripheral blood smear was taken. Urine and stool samples were also taken for occult blood analysis. The complete blood analysis was performed on automated hematology analyzer and the platelet count thus obtained was further confirmed by manual methods and peripheral smear examination.

Bone marrow aspiration and trephine biopsies were performed wherever necessary as per the clinical symptoms. Bone marrow aspiration and the staining were carried out by standard techniques and were stained by Giemsa staining. Paraffin block were made for the trephine biopsies and the sections form them were made into thin smears and stained by hematoxylin and eosin stains. When required, the aspirated samples were stained by Sudan black, periodic acid Schiff (PAS) stains. The biopsies were stained when required by Reticulin stain.

All the collected data was entered in SPSS version 20 and analyzed. Mean and SD was calculated for numerical data and frequencies were calculated for categorical data.

RESULTS

Total 56 patients were selected for this study. Mean age of the patients was 34.9±4.3 years. Out of the 56 patients, 33 (59%) were males and 23 (41%) were females (Figure 1). The major presentation of the patients with pancytopenia was megaloblastic anemia, which comprised of 24 (42.9%) of the cases. This was followed by aplastic anemia in 13 (23.2%) cases. Megaloblastic anemia was also more common in males than in females although this difference was not significant. Similar was the case with aplastic anemia where both males and females showed a prevalence of less than 25%. (Table 1)Among the common clinical symptoms, the most common one was pallor (73.2%) followed by weight loss (62.5%) and dyspnea (51.8%). Weakness, hepatomegaly and pain in leg were also seen in considerable number of cases (Figure 2).

Fig. 1: Gender distribution

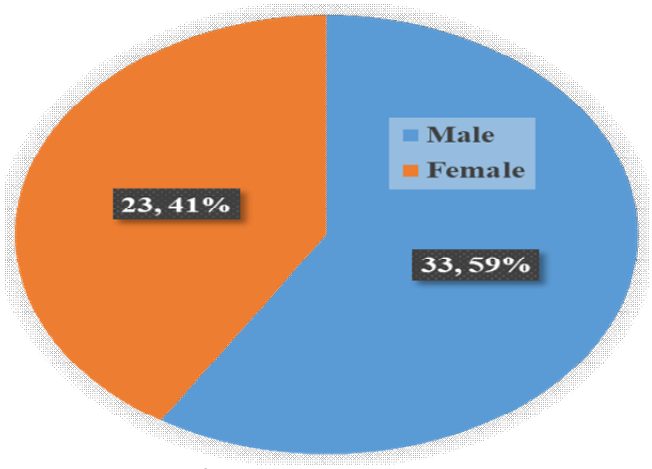
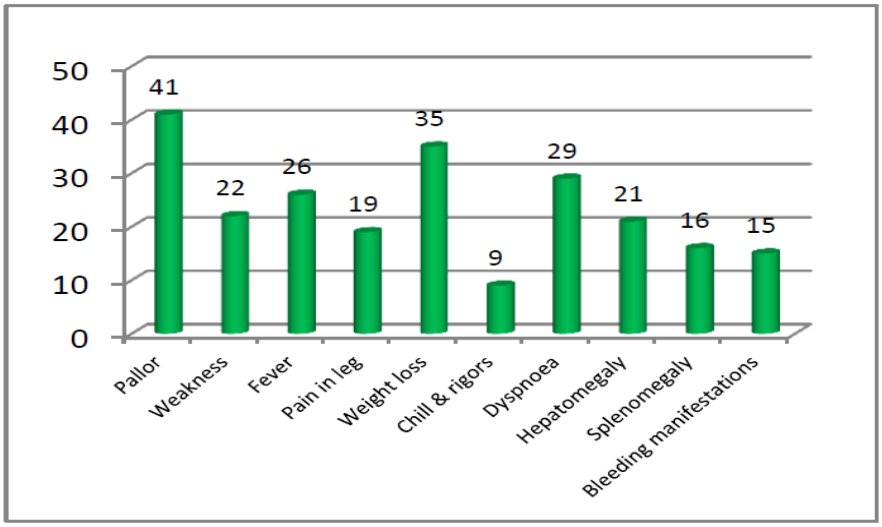


Table 1: Causes of pancytopenia in males and females.

Causes	Total(%)	Male N=33 (%)	Females N=23 (%)
Megaloblastic anemia	24 (42.9%)	14 (42.4%)	10 (43.5%)
Aplastic anemia	13 (23.2%)	8 (24.2%)	5 (21.7%)
Malaria	4 (7.1%)	3 (9.1%)	1 (4.3%)
Rheumatoid arthritis	4 (7.1%)	2 (6.1%)	2 (8.7%)
Cancer	2 (3.6%)	0	2 (8.7)
Liver disease	1 (1.8%)	1 (3%)	0
Disseminated intravascular coagulation	3 (5.4%)	2 (6.1%)	1 (4.3%)
Septicemia	2 (3.6%)	1 (3%)	1 (4.3%)
Dengue	1 (1.8%)	0	1 (4.3%)
Multiple myeloma	1 (1.8%)	1 (3%)	0
Tuberculosis	1 (1.8%)	1 (3%)	0

Figure 2: Clinical symptoms in cases with pancytopenia.



DISCUSSION

Pancytopenia is one of the common conditions observed in our day to day practice. It is not a disease but a triad of findings which result from a number of disease processes primarily or secondarily involving the bone marrow.[8]

This variation in the frequency of the causes of pancytopenia has been attributed to the differences in methodology and stringency of diagnostic criteria, period of observation, varying exposure to myelotoxic agents apart from the geographical area and genetic mutations.[13-15]

The prevalence of pancytopenia was more in males (59%) than in females (41%) in our study. In a similar study, Das et al observed an incidence of 58% in males and 42% in females,[19] 62.9% males and 37.09% females with pancytopenia was found in yet another study by Dasgupta et al.[18] Prasad et al also in his study found a slight preponderance of males over females[17] and Reddy et al found 54.8% to be males and 45.3% to be females.[16] In contrast, a female preponderance of 54.28% was seen in a study by Agarwal et al20 as was seen in another study by Kumar et al.[21]

The incidence of megaloblastic anemia is said to vary from 0.8% to 32.26%. But in our study, this incidence was higher with 42.9%. Yadav et al found an incidence of megaloblastic anemia to be 35.84%3, while Reddy et al of 38.1%.[16] A very high incidence of 68% of megaloblastic anemia was reported by Tilak et al in their study,[15] while only 1.43 % was observed by Agarwal et al.[20]

The second most common cause of pancytopenia in our study was aplastic anemia, which accounted for 23.2% of the cases. Similar results were observed by Reddy et al who reported 26.2% incidence. The incidence of aplastic anemia worldwide is said to vary between10%-52.7%. In the study by Agarwal et al, aplastic anemia was the second most common cause of pancytopenia accounting for 14.28%, after malaria, which was the most common cause accounting for 30%. In our study, malaria accounted only for 7.1% of the cases. Aplastic anemia was the most common cause of pancytopenia in several other studies.[18,21,22] Acute leukemia was found to be the major cause especially in children by Naseem et al in his study.[23]

Pallor was observed as the most common symptom in our study with more 73.2%, followed by weight loss in 62.5% of the cases. Dyspnea was observed in 51.8% of the patients. This was corroborated by Yadav et al, who reported 60% of the patients to be presenting with pallor, followed by 41.5% with fever. In a study by Agarwal et al, the most common presenting symptom was fever with 64.28 % followed by pain in legs in 34.28%.[20]Similar results were found by Khodke et al, who also found fever to be the most common symptom.[24]

CONCLUSION

Results of present study was showed that male patients were more victim of pancytopenia as compared to female patients. Megaloblastic anemia was the main cause of pancytopenia. Among the common clinical symptoms, the most common one was pallor.

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