

FREQUENCY OF PANCYTOPENIA IN PATIENTS WITH MEGALOBlastic ANAEMIA. A STUDY OF 149 ADMITTED PATIENTS IN A TERTIARY CARE HOSPITAL.

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ABSTRACT

Objectives: To determine the frequency of pancytopenia in patients with megaloblastic anaemia.

Material And Methods: This study was conducted at Medical Units, Khyber Teaching Hospital, Peshawar from January 2013 to January 2014. Study Design was cross-sectional (descriptive). More over non probability, consecutive sampling technique was used and the sample size was determined by WHO formula. Total 149 patients with megaloblastic anemia were screened for pancytopenia.

Results: In this study mean age was computed as 33 years with standard deviation as ± 15.84 . Fifty eight percent patients were males and 42% patients were females. Male to female ratio was 2:1. More over pancytopenia was found in 70% patients with megaloblastic anemia and was absent in 30% patients.

Conclusion: Megaloblastic anaemia and Pancytopenia are common problems in clinical and haematological practice. A vast majority of diseases may present with pancytopenia so it is of utmost importance to know the common causes of pancytopenia to reduce the morbidity and mortality.

Key Words: Pancytopenia, Meglaboblastic anemia, Bone marrow aspiration, Aplastic anemia

INTRODUCTION

Pancytopenia is defined by reduction of all the formed elements of blood below the normal reference range. The presenting symptoms are often attributable to the anemia or the thrombocytopenia. Leucopenia is often seen in the subsequent course of the disorder.¹ The most common cause of pancytopenia was megaloblastic anemia (45%) in a study conducted in India followed by infections (20%) and hypersplenism (15%).² A large numbers of pancytopenic patients have a reversible etiology. Early and proper diagnosis may be life saving. Megaloblastic anaemia, infections such as kala-azar, falciparum malaria and enteric fever, as well as SLE were found to be treatable and reversible causes of pancytopenia.³

Megaloblastic anaemia is a disorder characterized by distinct morphologic pattern in hematopoietic cells and is commonly due to vitamin B₁₂ or folates deficiency. The clinical manifestations of megaloblastic anaemia may involve hematologic (pancytopenia), cardio-pulmonary, gastrointestinal, dermatological, and genital & psychiatric systems.⁴

Megaloblastic anaemia is a common and treat-

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able cause of pancytopenia.⁵ The commonest cause of pancytopenia reported in one study was megaloblastic anaemia (74.04%) followed by aplastic anaemia (18.2%). Variations in the frequency of various diagnostic entities causing pancytopenia have been attributed to difference in methodology and stringency of diagnostic criteria, geographical area, period of observation, genetic differences and varying exposure to myelotoxic agents etc.⁶

This study will determine the frequency of pancytopenia in patients of megaloblastic anaemia presenting from local population where no such study has been conducted. The results of the study will be shared with other health professionals and suggestions will be given to incorporate regular screening of all patients with megaloblastic anaemia for pancytopenia. This will help for early detection and early management of pancytopenia to reduce the morbidity associated with pancytopenia. The results of the study can also be used to make hospital policy for pancytopenia and megaloblastic anaemia.

MATERIALS AND METHODS

This study was conducted in Department of Medicine, Khyber Teaching Hospital Peshawar from January 2013 to January 2014. Study design was cross sectional (descriptive) and non probability, consecutive sample technique was used. Sample size was calculated using the formula

$$n = \frac{Z^2 \times P \times (100-P)}{d^2}$$

d²

Where n is sample size P is prevalence of pancytopenia in megaloblastic anaemia which is 45%² d is acceptable margin of error i.e. 8% Z is 1.96 at 95% confidence interval

$$n = 1.96^2 \times 45(100-55)$$

8²

So sample n is 149.

All patients with anemia and age group 19-66 years were admitted in medical units of Khyber Teaching Hospital through emergency, out door department and consultants private clinics for initial work up. Detailed history and clinical examination was performed on all patients. Already diagnosed cases of aplastic anemia or acute leukemia, patients with hypothyroidism and patients taking methotrexate or other cytotoxic drugs were excluded from the study.

Patients having megaloblastic anemia according to operational definition on the basis of hemoglobin, mean cell volume and bone marrow were included in the study. Among these selected patients of megaloblastic anaemia, peripheral smear examination was done by expert hematologist to detect pancytopenia and all the tests were done by the same person.

The data was collected on the proforma annexed. SPSS version 10.0 was used for data analysis. Results were presented on tables/charts.

RESULTS

The study was conducted at Medical Units, Khyber Teaching Hospital, Peshawar in which a total of 149 patients were observed to find the frequency of pancytopenia in patients with megaloblastic anaemia and the results were analyzed as:

Age distribution was analyzed among 149 patients was analyzed as 24(16%) patients were <20 years, 42(28%) patients were in 21-30 years, 53(36%) patients were in 31-40 years and 30(20%) patients were

TABLE 1. AGE DISTRIBUTION (n=149)

Age	Frequency	Percentage
< 20 Years	24	16%
21-30 Years	42	28%
31-40 Years	53	36%
41-50 Years	30	20%
Total	149	100

TABLE 2. GENDER DISTRIBUTION (n=149)

Gender	Frequency	Percentage
Male	86	58%
Female	63	42%
Total	149	100%

TABLE 3. FREQUENCY OF PANCYTOPENIA IN MEGALOBlastic ANEMIA (n=149)

Pancytopenia	Frequency	Percentage
Yes	104	70%
No	45	30%
Total	149	100%

in 41-50 years of age. Mean age was computed as 33 years with standard deviation as ± 15.84 . (As shown in Table No 1).

Gender distribution was analyzed as 86(58%) patients were males and 63(42%) patients were females. Male to female ratio was 2:1 (as shown in Table No 2)

Frequency of pancytopenia with magaloblastic anemia was analyzed as pancytopenia was found in 104(70%) patients and was absent in 45(30%) patients. (As shown in Table No 3)

DISCUSSION

Pancytopenia is not an uncommon haematological problem encountered in clinical practice and should be suspected on clinical grounds when a patient presents with unexplained pallor, prolonged fever and tendency to bleed. Bone-marrow examination for the evaluation of pancytopenia is a frequently requested investigation. It is one of the most frequent and safe invasive procedures, with little or no risk of bleeding even in the presence of severe thrombocytopenia.⁸

In my study all the patients were in age range 15 - 60 years. Most of the patients 63% were in age range 21-40 years. Mean age was computed as 28 years with standard deviation as ± 15.84 . The nearly the same results were found in study done by Hamid GA.¹¹

In this study there was no sex restriction, so we had both male and female patients who presented to us with pancytopenia. There were 86(58%) males and 63(42%) females in this study. Male predominance is also observed in other studies conducted locally in Peshawar,^{3,4,7} Jamshoro⁸, Abbottabad.¹ Studies conducted abroad include Nepal⁷, India⁹ and Yemen.¹¹

The most common presenting feature was weakness found in 72 (80%) patients. In other studies symptoms related to anemia, i.e weakness and fatigue were found in 78.2% in a local study³ and 76 % in a study in Yemen.¹¹ The symptoms related to neutropenia i.e fever were the second most common encountered in our study, being found in 45 (50%) cases. In other reviews it varies from 40% to 50%.^{3,4,9,11} The third common feature was related to bleeding manifestation were seen in 35 (39%) of our patients. While in different studies it has been found 37%.^{4,3,8,9}

Physical examination of patients in our study showed pallor to be uniformly present in all the 90

patients (100%). Other local studies conducted by Ni-azi et al in Peshawar³ and Ishtiaq et al in Abbottabad¹ found 98.8% and 100% patients presenting with pallor respectively. Similarly a foreign study in Yemen in 2008 revealed that 100% pancytopenic patients were also pale.¹¹ In the Indian study, the author also found pallor to be universally present in all the patients with pancytopenia.⁹

Splenomegaly was found in 30(33%) cases, which is slightly higher than the results of Niazi et al 24%.³ A possible explanation may be the decreased frequency of bone-marrow aplasia 21% and increased frequency of visceral leishmaniasis 08%.³ Gamal and Safa found 48% splenomegaly in their study¹¹ while Kishor et al in his study of 50 patients found splenomegaly in 20 (40%) patients.⁹

In our study hypersplenism was found in 17% patients and Hepatosplenomegaly was found in 19% patients which is comparable Gamal and Safa's study in which hypersplenism were in 20% cases and Hepatosplenomegaly were in 22% cases.¹¹

Bleeding manifestations in our study were found in 25(28%) patients, which are comparable to the results of other local³ and foreign studies. Less common bleeding manifestations were epistaxis, bruises or purpura and melaena in our study.⁷

The mean hemoglobin in our study was 6.25 ± 1.24 . Mean TLC was $2818.77/\text{cmm} \pm 3746.97$ and mean platelet count was 44040.0 ± 43318.86 . A similar study in Al Gamhouria Teaching Hospital Aden, on 75 pancytopenic patients in 2005, shows the following mean values of the peripheral blood counts. Hb was 5.4 ± 1.9 , the mean of TLC was 2168.6 ± 820.9 while the mean platelet count was found to be 59.9 ± 28.6 . These results are comparable to our study.¹¹

In our study mean red blood cells was 2.65 ± 0.888 . Mean corpuscular volume was 114.31 ± 18.26 and mean corpuscular hemoglobin was 27.32 ± 4.26 . Mean corpuscular hemoglobin was 27.32 ± 4.26 . A similar study in Al Gamhouria Teaching Hospital Aden in which mean red blood cells was 2.41. Mean corpuscular volume was 117 and mean corpuscular hemoglobin was 28 and Mean corpuscular hemoglobin was 26.25.¹¹

In our study frequency of pancytopenia in megaloblastic anemia was 70%. The same results were found in study conducted by Zlotkin S in which the frequency of pancytopenia was 68%.¹⁰ Hamid GA had also shown 72% pancytopenia in his study.¹¹ A study conducted at a tertiary care center in India by Doshi D et al showed the prevalence of pancytopenia in 45 % of patients with megaloblastic anemia.² These studies reveal that megaloblastic anemia is a common and treatable cause of pancytopenia.

CONCLUSION

Megaloblastic anemia is a common cause of anemia and notorious to cause pancytopenia. It is very important to know the common causes of pancytopenia in our community, as some of them are completely curable while others can be treated to reduce morbidity and prolong survival. Pancytopenia is a very important clinical and hematological problem with an extensive differential diagnosis

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