Original Article

Pancytopenia in Balochistan Population

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ABSTRACT

Objective: Pancytopenia is a common hematological parameter detected in Hospital. It is important to study pancytopenia for better management of patient.

Study Design: Cross Sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine Bolan Medical Complex Hospital Quetta and this study was conducted from November, 2017 till February, 2019.

Materials and Methods: Patients presenting to medicine outpatient department of Bolan Medical Complex Hospital fulfilling the inclusion criteria were selected followed by their detailed history and physical examination. Informed consent was taken from all the patients.

Results: Pancytopenia represents a wide range of age groups and most pancytopenia is purely of bone marrow dysfunction origin. Overall, 65% male subjects were observed with pancytopenia as compared to 35% female patients. The results also showed that patients with age 21-40 were highly affected by pancytopenia (45%) followed by > 41 years (40%) and < 20 years (15%). Moreover, pancytopenia was more common in underweight patients (78%) followed by normal weight (18%), overweight (3%) and obese (1%). It was seen in study that illiterate patients presented more with pancytopenia (64%) than literate (36%). While in case of socioeconomic status pancytopenia was seen to be more frequent in upper middle class (55%) followed by lower middle class (30%) and lower class (15%).

Conclusion: A comprehensive clinical history and investigations give very useful information in the entire workup of patients with pancytopenia for understanding the disease processes, planning extra investigations, management, and ascertain the cause.

Key Words: Pancytopenia, Bone, Marrow, Balochistan

INTRODUCTION

Pancytopenia is defined as a reduction in all three types of cellular components in peripheral blood and this involves anaemia, neutropenia, and thrombocytopenia.[1] It is an important clinico-hematological entity encountered in our day to day clinical practice.[2] There are varying trends in its clinical pattern, hematological change, treatment modalities and outcome.[3]

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Pancytopenia is a manifestation of many serious & life threatening diseases with an extensive differential diagnosis. It should be suspected on clinical grounds when a patient present with pallor, prolonged fever and a tendency to bleed. The etiology of pancytopenia varies in different populations depending on the differences in age patterns, nutritional status, climate and the prevalence of infections.[4]

It is not a disease entity but a triad of findings that may result from a number of disease processes - primarily or secondarily involving the bone marrow.[5] The bone marrow is the largest and most widely distributed organ in the body. It is the principal site for blood cell formation. The spectrum of disorders primarily and secondarily affecting the bone marrow may manifest with peripheral pancytopenia.[6] Pancytopenia cause is diagnosed by bone marrow aspiration and it is extremely helpful in the evaluation of pancytopenia.[7] Common etiologies of pancytopenia are malaria (29.44%) followed by tuberculosis (17.22%), leukemia (16.67%), aplastic anaemia (13.33%) and hepatitis (12.22%).[8]

The severity of pancytopenia and the underlying pathology determine the management and prognosis of the patients.[9] In Quetta (Balochistan), the causes of Pancytopenia are not well defined and pancytopenia

often creates a diagnostic dilemma for the treating physician. Rational of this study was to check the prevalence of pancytopenia, thus prompt therapy can be provided to patients after diagnosis. Thereby, this data will help in planning the diagnostic and therapeutic approach in patients with pancytopenia.

MATERIALS AND METHODS

Study Design: Cross sectional study
Setting: Department of Medicine Unit- I, Bolan Medical Complex Hospital Quetta
Sample Size: Total sample size calculated was 100 with confidence level of 95%, level of significance 5% and power of test 80%.
Sampling Technique:
Non probability consecutive sampling
Sample Selection
Inclusion criteria:
1. Sex: both males and females
2. Pancytopenia (as defined in operational definition)
3. Newly diagnosed pancytopenia i.e within a week time after clinical presentation.
Exclusion criteria:
1. Patient on cancer chemotherapy
2. Patient is taking other cytotoxic/anti metabolic drugs
3. Patient who is taking radiotherapy
They all were confounders as they suppress the bone marrow thus causing pancytopenia and if included in the study would have caused bias.
Age selection: All age group patients were included in study.
Educational Status in Study: A person able to write and read urdu were considered as literate. People unable to read and write urdu were considered as illiterate.
Body Mass Index (BMI): Patients with BMI of 16 to 18.5 were considered as underweight, 18.5 to 25 normal weight, 25 to 30 overweight and greater than 35 as obese.
Economical Status: Patients having monthly family income of less than 15000 pk were categorized as lower class, 15000to 30000 pk as lower middle class, greater than 30000 as upper middle class
**Data Collection Procedure:** Patients presenting to medicine outpatient department of Bolan Medical Complex Hospital fulfilling the inclusion criteria were selected followed by their detailed history and physical examination. Informed consent was taken from all the patients.
Data Analysis Procedure: The data was entered and analyzed on SPSS version 17 with 95% confidence level and 5% level of significance. Frequencies, percentages and Mean ± SD were calculated for gender, age, BMI, economical status, educational status. Effect

modifier like age, gender, educational status and economic status were addressed through stratification and applying chi square test and $P < $ than 0.05 was considered statistically significant.
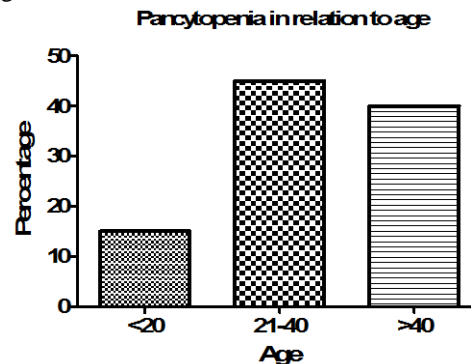
RESULTS

In the present study 100 patients with pancytopenia were included. Among these 65 (65%) were males and 35 (35%) females as shown in Fig-1.
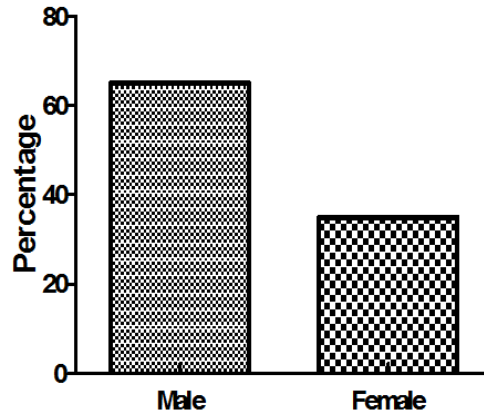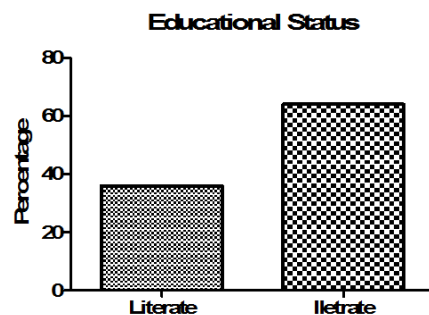

Figure No.1: Pancytopenia in relation to gender
The results showed that the most commonly affected age group of patients was 21-40 years (45%) followed by >41 years (40%) and <20 years (15%) as shown in Fig-2.

Figure No.2: Pancytopenia in relation to Age

Figure No.3: Pancytopenia in relation to education status
In 100 patients it was seen that patients from a lower socioeconomic status presented more with

pancytopenia. Also, a significant difference was observed in the distribution of patients by education level with 64% patients were illiterate and 36% literate. This emphasizes the importance of literacy by showing that pancytopenia is more common in uneducated than educated persons as shown in Fig-3.

The chance of developing pancytopenia increases with decreasing body mass index (BMI), but there is strong evidence that at any given BMI the risk of pancytopenia is markedly high in low socioeconomic status. In our study it was seen that patients with low BMI presented more with pancytopenia, revealing pancytopenia in 78% of underweight, 18% of normal weight, 3% of overweight and 1% of obese patients as shown in Fig-4.
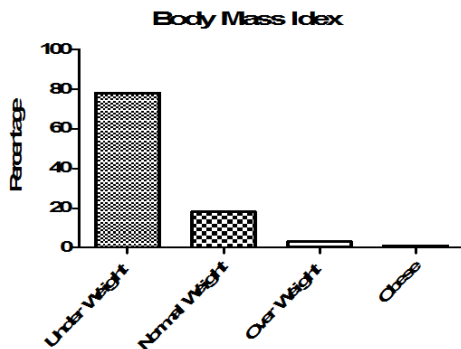

Figure No.4: Pancytopenia in relation to BMI

There is concern among public health professionals that the current economic downturn, initiated by the financial crisis could precipitate the incidence of pancytopenia. But in our study it was seen more in the upper middle class with 55 % of patients belonging to this class, 30% belonging to lower middle class and 15% belonging to lower class as shown in Fig-5.
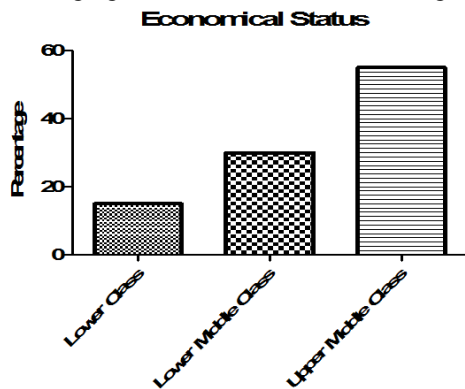

Figure No.5: Pancytopenia in relation to economical status

DISCUSSION

Pancytopenia is a clinical condition in which there is reduction in the number of the RBC, WBC and platelets[10]. As a large proportion of causes for pancytopenia are treatable and reversible, accurate diagnoses and timely intervention maybe lifesaving and will certainly have impact on the morbidity and mortality in these vulnerable patients [11]. Knowing the exact etiology is thus important for specific and timely treatment and for prognostication [12]. As the etiologies of pancytopenia are varied, so is the prognosis [13]. General physicians who are not hematologists are unlikely to be as well versed in the specific constellation of findings that characterize individual hematologic entities[14]. Stringent diagnostic criteria and a general conceptual framework for ascertaining the cause of pancytopenia is therefore very valuable and a demand of time. Overall, 65% male subjects were observed with pancytopenia as compared to 35% female patients. The same result was reported by Azaad et al[11] that incidence of pancytopenia is slightly higher in male populations[15-16]. The results also showed that patients with age 21-40 were highly affected by pancytopenia (45%) followed by > 41 years (40%) and < 20 years (15%) similar findings are reported by Tareen[8].

Moreover, pancytopenia was more common in underweight patients (78%) followed by normal weight (18%), overweight (3%) and obese (1%). It was seen in study that illiterate patients presented more with pancytopenia (64%) than literate (36%). While in case of socioeconomic status pancytopenia was seen to be more frequent in upper middle class (55%) followed by lower middle class (30%) and lower class (15%), similar finding was observed by Dadhy et al [7].

CONCLUSION

Pancytopenia is a common entity. However, it has received inadequate attention in the Indian subcontinent. A study of pancytopenia using easily available diagnostic techniques is therefore important. Age and sex distribution of patients with pancytopenia in this study was consistent with the findings in other studies. However, in view of a wide array of etiological factors, pancytopenia continues to be a challenge for hematologists.

Author's Contribution:

Concept & Design of Study:	Zohra Samreen and Muhammad Kamran Taj
Drafting:	Zohra Samreen and Ashiq Hussain
Data Analysis:	Zohra Samreen and Bezan Baloch
Revisiting Critically:	Zohra Samreen, Iftakhar ul Haq Tareen
Final Approval of version:	Zohra Samreen and Muhammad Idrees Achakzai

Conflict of Interest: The study has no conflict of interest to declare by any author.

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