

**Research Article****Hematological Changes in Pancytopenia Patients**

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**ABSTRACT**

**OBJECTIVES:** Hematological parameters assessment in the patients of pancytopenia at Quetta Balochistan is the objective of the research study.

**STUDY DESIGN:** A cross-sectional study

**PLACE AND DURATION:** At the venue of Bolan Medical Complex Hospital, Quetta (Department of Medicine Unit-I) the research was carried out from Jan, 2016 to May, 2016.

**METHODOLOGY:** After evaluating physical examination and history of the patients all those patients fulfilled the prerequisite criteria were including in research study. Required sampling was carried of blood for clinical examination. Samples were verified for parameters like hemoglobin, platelet count, white blood cell count, mean cell volume and reticulocyte count. Abbott cell-dyne 1700 was used for the complete analysis of the blood samples. SPSS-17 was used for the data analysis.

**RESULT:** In total one hundred samples were collected and among these samples fifty percent of the cases reflected the range of hemoglobin from 5.1 to 7 g/deciliter; whereas, forty-four percent of the cases were diagnosed clinically leukocytic with a value of 3100 cells/cumm. Results of the research reflect that 40 percent of the cases had a count of platelets ranging from 51,000 to 75,000 cells/cumm; whereas, fifty-eight percent of the cases were reflecting count of reticulocyte ranging from 0.1 to 2 percent. Forty-six percent of the cases were observed as the mean cell value and the range was observed from 86 – 90 fl.

**CONCLUSION:** Comparatively better procedure is hematological investigation that studies the count of blood cells and its assessment for the decision of severity of pancytopenia. Very comprehensive hematological investigations and clinical history provides useful information for the complete homework about patients suffering from pancytopenia. For better disease understanding, extra investigation planning, ascertaining causes and its management.

**KEY WORDS:** Platelet, Hemoglobin, Reticulocyte, Leukocytic, Quetta, Patients and Balochistan.

**INTRODUCTION**

Hence, if the male's hemoglobin level is below (13.5g/dl) the chances of pancytopenia occurrence are more and in the case of females (11.5g/dl) with the count of white blood cell below ( $4 \times 10^9/L$ ) & platelet count below ( $150 \times 10^9/L$ ) [1]. Genetic variations and environmental allocation play their role in the control of multiple and diverse disorders pancytopenia occurrences in populations

in terms of race, age and sex nutritional prevalence and deficiencies of infections like HIV, hepatitis C etc [2]. Extended workout for pancytopenia in its diagnosis is mandatory in basic pathology for environmental exposure, secure clinical investigation and history of drug intake [3]. Pancytopenia is graded as a common entity. In our region it is still covered and no

interest has been reflected for its diagnosis and treatment. Important techniques for the diagnosis is sampled research and study of the pancytopenia[4]. Clinical etiology and hematological investigation with precision are mandatory. It is a challenge for physicians and hematologists as its diagnosis is not considered important because of the involvement of an etiological array factors[5]. No well described reasons have been listed about the diagnosis of pancytopenia in Balochistan specially in Quetta. A diagnostic problem is always persistent concerning to pancytopenia patients by the physicians and hematologists[6]. The same problem has been focused in this research paper for the evaluation of variety of hematological shifts in the patients of pancytopenia[7]. The facts and information produced during the course of research will ultimately help in the management of pancytopenia diagnosis through a therapeutic method in the patients suffering from pancytopenia[8]. The objective of the research revolves around the assessment of hematological parameters in the patients of pancytopenia at Baluchistan's capital[9].

**METHODOLOGY**

Hematological parameters assessment in the patients of pancytopenia at Quetta Balochistan is the objective of the research study. Design of the research was cross-sectional. At the venue of Bolan Medical Complex Hospital, Quetta (Department of Medicine Unit-I) the research was carried out from Nov, 2014 to Feb, 2015. With a significance of five percent and confidence of ninety-five percent non-probable consecutive way of collecting the sample was adapted and to test the power even eighty percent of confidence was also considered. Recently diagnosed patients were also made a part of the research paper. Patients on radiotherapy and chemotherapy were excluded from our research. Brachial vein blood samples were sent for necessary clinical investigations. Samples were verified for parameters like hemoglobin, platelet count, white blood cell count, mean cell volume and reticulocyte count. Abbott cell-dyne 1700 was used for the complete

analysis of the blood samples. SPSS-17 was used for the data analysis.

**RESULTS**

In total one hundred samples were collected and among these samples fifty percent of the cases reflected the range of hemoglobin from 5.1 to 7 g/deciliter; whereas, forty-four percent of the cases were diagnosed clinically leukocytic with a value of 3100 cells/cumm. Results of the research reflect that 40 percent of the cases had a count of platelets ranging from 51,000 to 75,000 cells/cumm; whereas, fifty-eight percent of the cases were reflecting count of reticulocyte ranging from 0.1 to 2 percent as reflected in Table-I.

**TABLE - I: DISTRIBUTION OF HEMOGLOBIN IN PATIENTS WITH PANCYTOPENIA (N=100)**

Haemoglobin g/dL	Number	Percentage
1 to 3	10	10
3.1 to 5	20	20
5.1 to 7	50	50
7.1 - 10	20	20
<b>Total</b>	100	100

Count of leukocytic ranged from (500 to 4000 cells/cumm). Further subdivisions of this range were as 44, 28, 22 and 6 percent of the patients had a leukocytic count respectively 3100-4000, 2100-3000, 1100-2000 and 500-1000 cells/cummas reflected in Table-II. Platelet count value ranged from (4000 to 1,50,000 cells/cumm). Further subdivision of this range was as 40, 24, 18, 14 and 4 percent of the patients respectively 51,000-75,000, 76000-100000, 26000-50000, 101000-150000 and 4000-25000 cells/cummas reflected in Table-II.

**TABLE-II: DISTRIBUTION OF LEUKOCYTE AND PLATELET COUNT IN PATIENTS WITH PANCYTOPENIA (N=100)**

Leukocyte Count		
Cells/cumm	Number	Percentage
500-1000	6	6
1100-2000	22	22
2100-3000	28	28
3100-4000	44	44
<b>Total</b>	100	100

Platelet Count		
Cells/cumm	Number	Percentage
4000-25000	4	4
26000-50000	18	18
51000-75000	40	40
76000-100000	24	24
101000-150000	14	14
<b>Total</b>	100	100

Reticulocyte Count		
Cells/cumm	Number	Percentage
0.1-2	58	58
2.1-4	6	6
4.1-6	12	12
6.1-8	10	10
8.1-20	14	14
<b>Total</b>	100	100

The count of reticulocyte values was between the range of 0.1% to 20%. Further subdivision in 58, 6, 4, 12, 6, 10 and 8 patients were ranging respectively as 0.1 to 2, 2.1 to 4, 4.1, 6.1 and 8.1 to 20 percent as reflected in Table-II.

Mean cell volume values in percentage were between 70 – 96 fl. Further subdivision of these patients was 46, 30, 10 and 6 patients had the respective range of 86 – 90 fl, 81 – 85 fl, 91 – 96fl and 76 – 80 fl as reflected in Table-III.

**TABLE III:** MEAN CELL VOLUME IN PATIENTS WITH PANCYTOPENIA(N=100).

Mean Cell Volume/fl		
Volume/fl	Number	Percentage
76-80	6	6
81-85	38	38
86-90	46	46
91-96	10	10
<b>Total</b>	100	100

**DISCUSSION**

Pancytopenia is not dealt as a disease but it is used as a sign for the diagnosis of other diseases. Its decreased value in the components of cellular nature results in the shape of leucopenia, anemia,

thrombocytopenia among patients[10]. This state is observed in routine while clinical exercise, literature is not available in abundance that tells about the hematological shifts about pancytopenia[11]. An easy, secure and simple way is hematological investigation causes problem in the shape of light bleeding in patients[12]. For the explanation of undiagnosed cytopenia and related malignants such as leukemia. Pancytopenia is relatively common. Many lethal diseases are diagnosed through the presentation of pancytopenia[13]. Its ranges from the disease of drug-related simple suppression of bone-marrow to complex natured bone-marrow (leukemias)[14]. It also causes mortality and morbidity. Pancytopenia severe etiology directs and decides its administration. Pointed and accurate diagnosis becomes necessary for the disturbed level of pancytopenia as it aids in the exact diagnosis of the disease[15]. Range of the hemoglobin values is between (1 - 10 g/dL). Maximum patients (50%) reflect the range of hemoglobin from (5.1-7 g/dL); whereas[16], leukocytic value count is between (500-4000 cells/cumm). Kadamand Gayathri validate these results. Platelet count value ranged from (4000 to 1,50,000 cells/cumm)[17]. Further subdivision of this range was as 40, 24, 18, 14 and 4 percent of the patients respectively 51,000-75,000, 76000-100000, 26000-50000, 101000-150000 and 4000-25000 cells/cumm as reflected in Table-II [18]. Count of leukocytic ranged from (500 to 4000 cells/cumm). Further subdivisions of this range were as 44, 28, 22 and 6 percent of the patients had a leukocytic count respectively 3100-4000, 2100-3000, 1100-2000 and 500-1000 cells/cumm as reflected in Table-II[19]. The count of reticulocyte values was between the range of 0.1% to 20%. Further subdivision in 58, 6, 4, 12, 6, 10 and 8 patients were ranging respectively as 0.1 to 2, 2.1 to 4, 4.1, 6.1 and 8.1 to 20 percent as reflected in Table-II[20]. Mean cell volume values in percentage were between 70 – 96 fl. Further subdivision of these patients was 46, 30, 10 and 6 patients had the respective range of 86 – 90 fl, 81 – 85 fl, 91 – 96 fl and 76 – 80 fl as

reflected in Table-III[21]. Multiple researches held on the same topic also validate the outcomes of our research study[22].

## CONCLUSION

Comparatively better procedure is hematological investigation that studies the count of blood cells and its assessment for the decision of severity of pancytopenia. Very comprehensive hematological investigations and clinical history provides useful information for the complete homework about patients suffering from pancytopenia. For better disease understanding, extra investigation planning, ascertaining causes and its management.

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