

## Study of Clinical Profile of pancytopenia in tertiary care centre among hospitalized patients

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**Conflicts of Interest:** Nil

### Introduction

Pancytopenia is itself not a disease process but results from number of disease processes that primarily or secondarily involve bone marrow can cause pancytopenia. Pancytopenia is defined as reduction of all three formed blood elements below the normal range that is simultaneous presence of anemia, leucopenia and thrombocytopenia.

Hemoglobin is < 13.5 gm/dl in male and < 11.5 gm/dl in female, WBC count < 4000 /uL and platelet < 150,000/uL.

**Aims:** To study clinical features of pancytopenia in tertiary care center among hospitalized patients

### Objectives

1. To study clinical features of patients presenting with pancytopenia due to various causes.
2. To study demographic characteristics of patients with presenting with pancytopenia.
3. To find out the underlying etiopathology of patients presenting with pancytopenia.
4. To study management of pancytopenia in tertiary care

center among hospitalized patients.

### Methods

The study was conducted at tertiary care centre among hospitalised patients satisfying inclusion criteria

Study period – 18 months of data collection and 2 months for data analysis.

Study design – Observational cross-sectional study

Sampling method – Simple random sampling of the subjects fulfilling the study criteria

### Inclusion Criteria

1. Patients with presence of all 3 of the following: hemoglobin, Hb < 13.5 gm/dl in males and < 11.5 gm/dl in female; total leukocyte count (TLC) < 4000 /uL and platelet < 100,000/uL.
2. Patients aged more than 12 years of age
3. Patients willing to sign written informed consent to participate in the study.

### Exclusion Criteria

1. Patients with the history of chemotherapy, radiotherapy, myelosuppressive drugs.

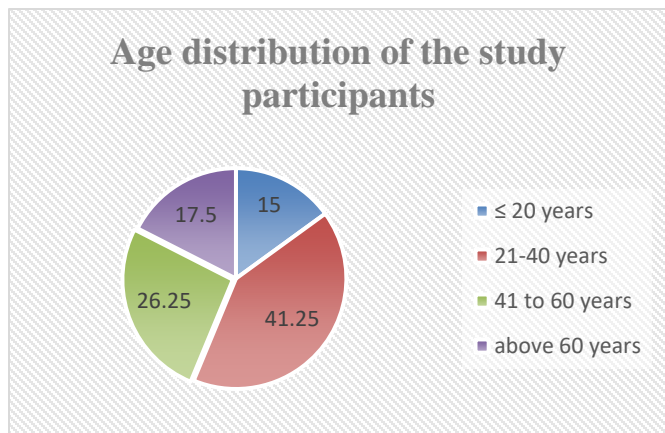
2. Patients not willing to follow up for further investigations.

3. Pregnant females

**Results**

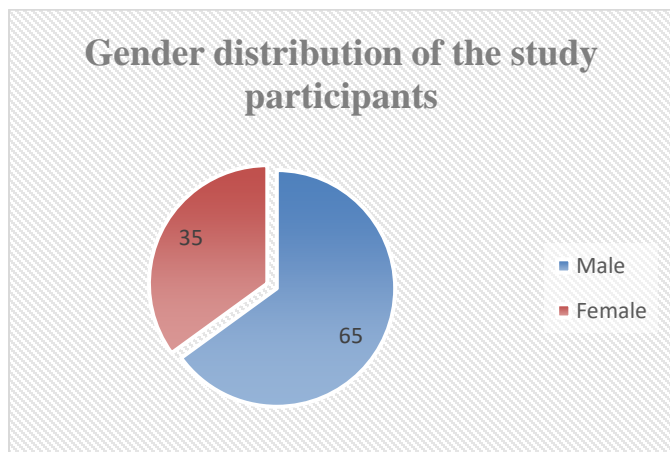
This cross-sectional observational study was conducted at a tertiary care centre with 80 cases of pancytopenia.

1. Age distribution of the study participants.



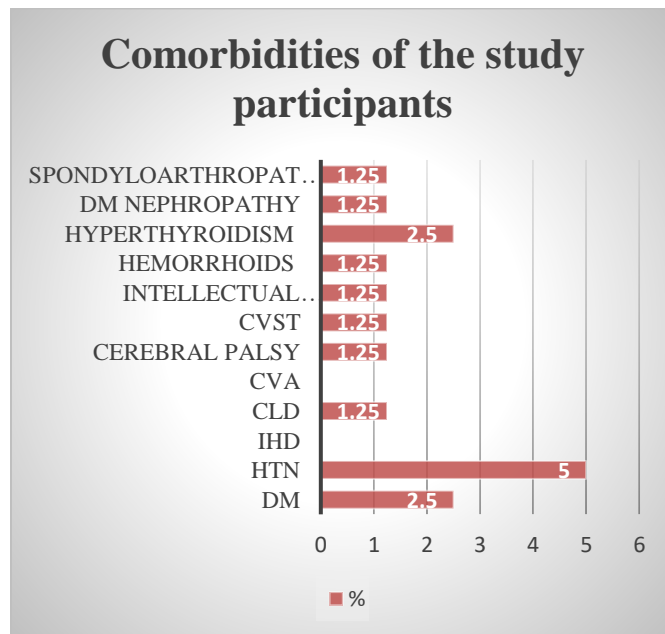
The maximum cases of pancytopenia (41.25%) belonged to younger i.e. age between 21 to 40 years, followed by 26.25% cases between 41 to 60 years, 17.5% cases were above 60 years while 15% cases were below or equal to 20 years.

2: Gender distribution of the study participants.



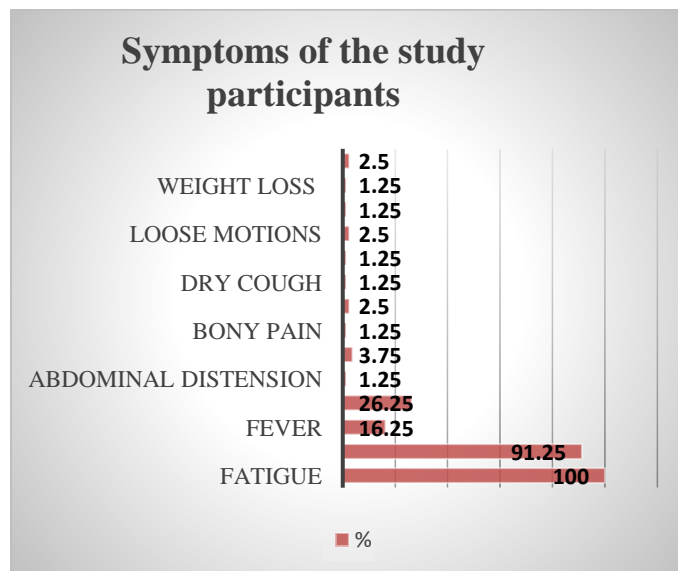
In the present study there was a male preponderance with 65% males and 35 % females.

3. Comorbidities of the study participants



Hypertension observed as the most common comorbidity followed by 2.5 % had diabetes mellitus and 1.25% had CLD, 2.5% had hyperthyroidism and 1.25 % had cerebral palsy, CVST, Intellectual disability, hemorrhoids, DM nephropathy and Spondyloarthropathy.

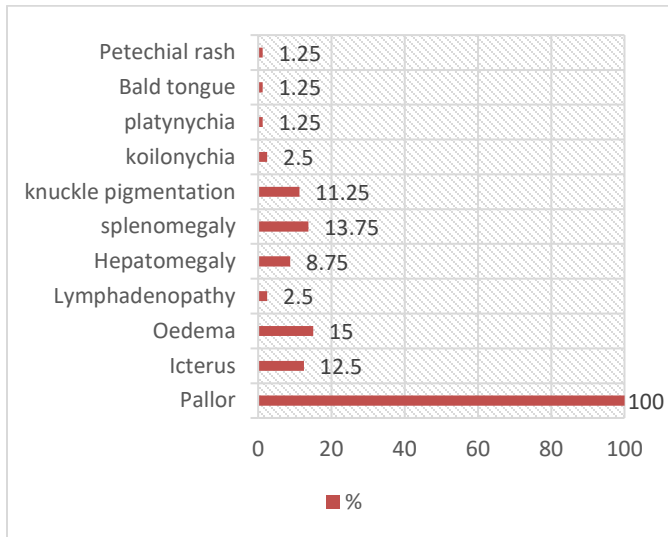
4: Symptoms of the study participants



Pancytopenia patients had Fatigue, and breathlessness as commonest symptom, followed by bleeding and 16.25% had fever, 3.75% patients had symptoms like bilateral leg swelling, followed by 2.5 % had decreased appetite,

loose motion and yellowish discoloration of eye, rest weight loss, palpitation, vomiting, dry cough, bony pain and abdominal distension had 1.25% each.

5. Distribution of clinical signs of the pancytopenia cases



Pallor (100%) and oedema (15%) were most common clinical signs observed in pancytopenia patients, followed by lymphadenopathy and koilonychia in 2.5 cases of pancytopenia each, other findings were bald tongue, mucocutaneous rash, platynychia in 1.25 % cases. Hepatomegaly was observed in 8.75% cases of pancytopenia.

6. Hematological findings and pancytopenia

In the present study, the average of HB was  $5.48 \pm 2.12$ , average of WBC was  $2721.75 \pm 982.04$ , average of platelet  $50.19 \pm 37.97$ , MCV average was  $93.02 \pm 15.31$ , reticulocyte average was  $0.93 \pm 1.35$ , Vit B12 average was  $423.45 \pm 368.99$  and ferritin average was  $160.89 \pm 87.71$ .

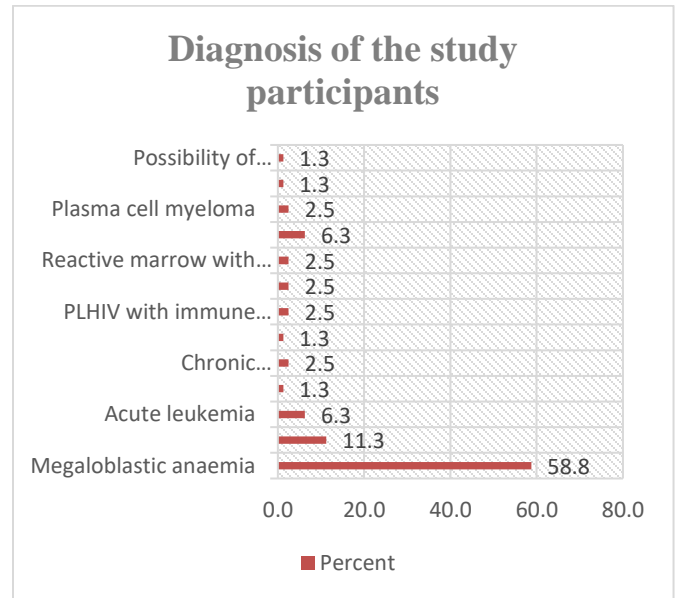
7. Bone marrow findings and etiology

Megakaryocytes were observed in 51.1% cases of Megaloblastic anemia and 22.20% of Dimorphic anemia. Myeloblast were observed in 2 cases (40%) of Acute leukemia and 1 case (11.1%) of Dimorphic anemia.

Hypercellular bone marrow was observed in majority of the cases in all the etiologies.

Hypocellular changes were observed in 2 cases (20%) of Acute leukemia, 1 case (100%) of Hemolytic anaemia

8. Etiology of Pancytopenia



Most common etiology was found to be megaloblastic anemia accounting for 58.8%. Second most common causes were dimorphic anemia accounted for 11.3%. Followed by decreasing trend – acute Leukemia 6.3%, partially treated nutritional anemia 6.3%, Plasma cell myeloma, Chronic lymphoproliferative disorder, PLHIV with immune mediated thrombocytopenia, and Reactive marrow with dimorphic erythropoiesis had 2.5 % each and hemolytic anemia, Hemophagocytic syndrome, reactive changes in bone marrow and Possibility of hemophagocytic syndrome had 1.3% each.

Conclusion

1. Maximum cases occurred in younger age group i.e., between 21 to 40 years, with male preponderance.
2. Fatigue and breathlessness were commonest presenting symptoms.

3. Pallor and oedema were most common clinical signs observed.

4. Splenomegaly was observed in 13.75% cases of pancytopenia

5. Hepatomegaly was observed in 8.75% cases of pancytopenia.

7. Hypertension was most common comorbidity observed in patients of pancytopenia

8. Megaloblastic anemia was found to be the most common cause of pancytopenia

### Summary

Along with history, detailed physical examination, Peripheral blood smear and bone marrow examination have important role to identify etiology of pancytopenia and management.

Identification of cause of pancytopenia is very important for proper management as most cases were found to be of treatable cause, megaloblastic cause.

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