

## Clinical Profile and Etiological Evaluation of Pancytopenia in a Tertiary Care Hospital

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### Original Research Article

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**Abstract:** Evaluation of clinical and etiological profile of Pancytopenia in a tertiary care hospital. This is a Retrospective study conducted in dept of medicine in SDMCMSH Sattur Dharwad during the period of July 2017 – December 2017. 50 Inpatients who fulfilled the diagnostic criteria of Pancytopenia were evaluated and detailed history and clinical evaluation was done. Selected patients were evaluated with bone marrow examination. Among 50 inpatients of Pancytopenia studied, age of patients ranged between 18-90years with commonest age being 5-7<sup>th</sup> decade with male preponderance. Most of the patients presented with easy fatigability and exertional breathlessness. Commonest etiology found in our study was nutritional anemia secondary to VitB12 and folate deficiency. Pancytopenia is a hematological problem having underlying various etiologies. Megaloblastic anemia due to nutritional deficiency was most common cause observed in this part of population. A detailed clinical history and examination and baseline haematological investigation provide valuable information for further evaluation of pancytopenic patients and reach to a etiological diagnosis.

**Key words:** Pancytopenia, megaloblastic anemia, dimorphic anemia.

### INTRODUCTION

Pancytopenia is an important clinico-haematological entity encountered in our day to day practice. Pancytopenia is decrease in all three cell lines leading to anaemia, leukopenia and thrombocytopenia. It is not a disease entity but triad of findings that may result from number of underlying disease processes that either primarily or secondarily involve bone marrow.

There are wide varieties of etiologies leading to diagnostic dilemma, ranging from congenital bone marrow suppression, marrow infiltrations, aplastic anaemia, megaloblastic anaemia, leukaemia, Myelodysplastic syndrome, hypersplenism, infections and drugs or toxins causing myelosuppression. The present study is aimed at finding the varied clinical manifestations and etiologies causing pancytopenia with laboratory investigations and bone marrow study whenever indicated. Thereby this data would help in identifying common etiologies of pancytopenia; it's diagnostic and therapeutic approach.

### MATERIALS AND METHODS

This is a retrospective study conducted in Dept of medicine in SDM College of a medical sciences and hospital, Dharwad during the period of July 2017 to December 2017. 50 Inpatients of pancytopenia were evaluated. History and clinical examination was done. Laboratory work up by complete hemogram, peripheral smear, serum iron

assays, Vit B12 and folate assay followed by Bone marrow study whenever indicated was performed. The case selection was done those who fulfilled criteria defined by deGruchy as follows [1].

1: Hemoglobin (Hb) level below 13.5g/l for males and below 11.5g/l for females.

2: TLC below  $4 \times 10^9/l$

3: Platelet count below  $150 \times 10^9/l$

A detailed clinical history including alcohol intake, smoking, and exposure to drugs, chemicals and toxic agents were taken. Detailed clinical examination was done for pallor, jaundice, hepatosplenomegaly, lymphadenopathy sternal tenderness etc. whenever indicated additional investigation were performed like LFT, RFT, stool for occult blood, HIV, HBsAg, HCV, chest X-ray USG Abdomen and pelvis, urinary bence jones proteins.

All the selected patients thus evaluated thoroughly for cause of pancytopenia and the data was

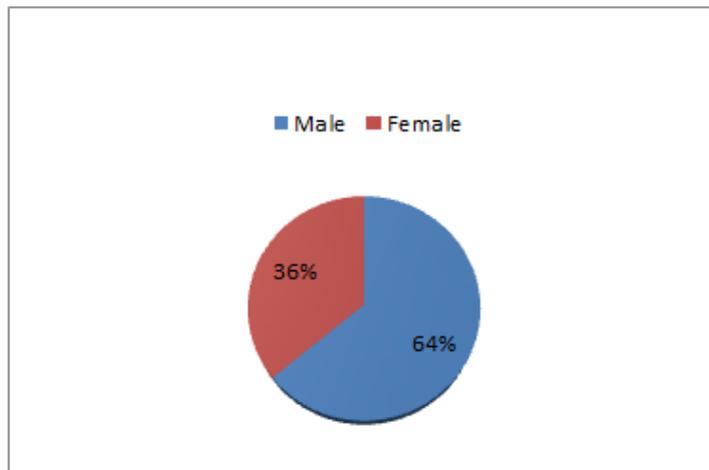
analysed on the basis of aetiology, clinical and haematological findings and thus reached to a definitive diagnosis.

50 cases of pancytopenia were selected and evaluated. The results are as follows.

**RESULTS**

**Sex distribution**

Among 50 patients 64% were males and 36% were females.



**Fig-1: Sex distribution**

**Age distribution**

**Table-1: Age distribution**

Age	Total cases
18 - 30	12
31 - 50	17
51 - 70	19
71 - 90	2

In this study maximum number of cases was between the age group of 51-70yrs followed by 31-50yrs.

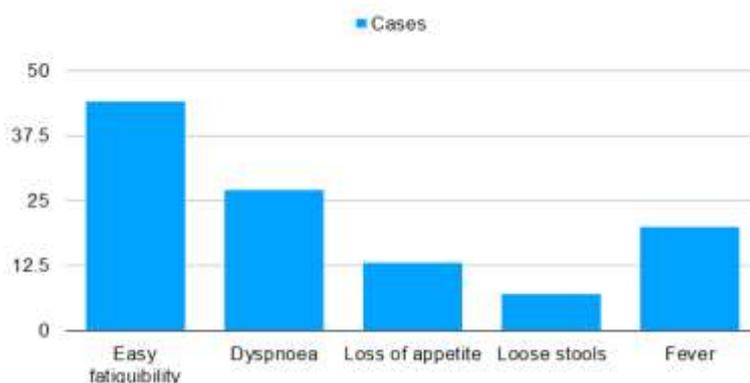
breathlessness, 26% with loss of appetite and 14% had loose stools.

**Clinical features**

Among 50 patients, 40% presented with fever, 88% with easy fatiguability, 54% with exertional

**Clinical signs**

In this study all 50 cases had pallor, 30 cases had icterus, 5 cases had lymphadenopathy and 08 cases had hepatosplenomegaly.



**Fig-2: Clinical features**

**Table-2: Clinical signs**

Signs	No of cases
Pallor	50 (100%)
Icterus	30 (60%)
Lymphadenopathy	05 (10%)
Hepatosplenomegaly	08 (16%)

**Lab parameters**

In this study all patients were subjected to vitamin B12 and folate assay. 52% had vitamin B12 deficiency and 54% had folate deficiency.

**Peripheral smear picture**

Peripheral smear study revealed most common picture being megaloblastic (78%) followed by dimorphic(14%)

**Table-3: Lab parameters**

DEFICIENCY	CASES
Vit B12	26 (52%)
Folate	27 (54%)

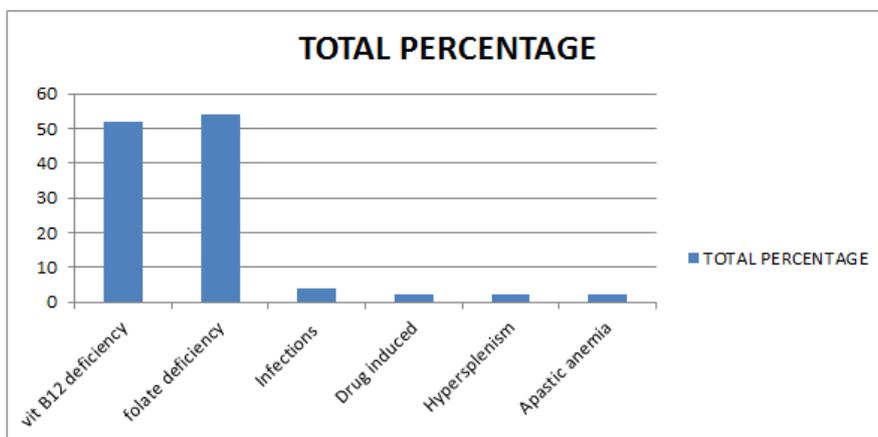
**Etiological distribution**

In this study the commonest cause being Megaloblastic anemia due to Vitamin B12 and Folate

deficiency (47%), followed by infection due to HIV. One case each of Hypersplenism, Aplastic anemia and drug induced pancytopenia was found.

**Table-4: Etiological distribution**

ETIOLOGICAL DISTRIBUTION OF CASES						
Etiologies	Vitamin B12	Folate	Infection	Drug induced	Hypersplenism	Aplastic
No of cases	26	27	2	1	1	1



**Fig-3: Etiological distribution**

**DISCUSSION**

Pancytopenia is an important clinical problem seen in our day to day practice. It has varied manifestation which may be due to anemia, thrombocytopenia and life threatening infections due to leukopenia. This study was done to find out the underlying etiology of pancytopenia in this part of the population.

In our current study the age of presentation ranged between 18 - 90 years, most common being between 5th-7th decades. In our study male preponderance was seen with male to female ratio being 1.7:1 with total males 64% and 36% females, similar observation was also seen in other studies like Tilak and Jain *et al.* [2] and Gayathri B N *et al.*[3]

In our study the most common presentation was easy fatiguability 88%, followed by exertional breathlessness 54% and fever in 40% of cases. These findings correlate with other studies Niazi and Razia *et al.* [4] and Khodke *et al.*[5].

All 50 cases had pallor on clinical examination followed by icterus in 60% of cases and Hepatosplenomegaly in 16% of cases. In our study nutritional anemia is the most common cause of pancytopenia which includes megaloblastic anemia (78%) and dimorphic anemia (12%), which was based on complete hemogram and Vit B12 and Folate assays.

The high incidence of megaloblastic anemia in this part of north karnataka correlates with

nutritional deficiencies in our subcontinent as also observed in other studies by Akshata *et al.*[6] and Gayathri B N *et al.* Dimorphic anemia is the second most common finding in our study due to both iron and vit B12 deficiency, which was also seen in a study done by Gayathri B N *et al.*[3].

In our study Vit B12 and folate assays were done and it showed deficiency in 52% and 54% respectively. We observed the dietary habits of our study cases and found that 64% were vegetarians and also 32% of cases were alcoholics with high MCV in this group of patients, which contributes to deficiency of B12 and folate.

Infections can also cause pancytopenia. In our study 2 cases i.e 4% were found to have HIV infection. Pancytopenia in this group of cases may be due to HIV infection per se or opportunistic infections, malignancies or due to HAART therapy. Similar studies on HIV were compared as done by Sankepally *et al.* [7] and Thakkar *et al.*[8]

In our study of among 50 cases, one case of Aplastic anemia was diagnosed, which is also a well-known cause of pancytopenia. It's a very rare form of haematological abnormality, incidence being 2.3/million cases. Similar observations were seen in a study by Tilak V Jain *et al.*[2].

We also observed one each case of pancytopenia in a patient who was on long term anti-epileptic medication i.e Phenytoin and another case due to hypersplenism secondary to chronic liver disease, this contrast to some studies where hypersplenism is either first or second commonest cause. But our study correlates with Kumar *et al.*[9] and Aziz T *et al.*[10] where incidence of hypersplenism is less.

Not all patients in our study were subjected to bone marrow aspiration and biopsy as our study cases had predominantly nutritional cause of pancytopenia which improved on trial of Vit B12 and folate supplements. Hence Bone marrow study was performed whenever indicated. A total of 2 cases underwent bone marrow study, 1 among them showed normal cellularity and other had features suggestive of megaloblastic picture.

## CONCLUSION

Pancytopenia is a hematological problem encountered frequently, it has varied etiologies. Megaloblastic anemia due to nutritional deficiency was most common cause observed in this part of population. A detailed clinical history and examination and baseline haematological investigation provide valuable information for further evaluation of pancytopenic patients and reach to a etiological diagnosis. As a large proportion of cases of

pancytopenia are reversible and treatable with early diagnosis and intervention hence may be lifesaving. In our study majority of cases were treatable hence carried a good outcome.

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